ELECTRICAL WEST

THE ALL-INDUSTRY MAGAZINE OF PROGRESS

GRAW-HILL CO. JULY 1940 25c a Copy

YOU CAN COOK
EASIER, BETTER, COOLER
WITH THIS MODERN ELECTRIC
"SMALL SPACE" KITCHEN COOKER
ROASTS, BAKES, BROILS, FRIES...COOKS ENTIRE MEAL AT ONE TIME... EASY TO USE... JUST PLUG IT IN
YOU PUT IN THE FOOD AND THE ROASTER DOES THE REST
ELECTRIC ROASTER Event $3 NOW AS LOW AS DOWN
THOUSANDS COOK THIS EASY WAY
GET ALL THESE NEW FEATURES
NOW ON DISPLAY
AT YOUR DEALER OR EDISON OFFICE

GET THIS
ELECTRIC ROASTER NOW
FOR COOLER, EASIER, BETTER COOKING THIS SUMMER...
FOODS ARE DELICIOUS COOKED IN MY ELECTRIC ROASTER!
JUST "PLUG-IN" TO ROAST, BAKE OR BROIL
TWO TYPES
MANY NEW FEATURES
ELECTRIC ROASTER Event $3 NOW
AT YOUR DEALER OR EDISON OFFICE

HERE IS
ELECTRIC COOKING FOR YOU
ROASTS, BAKES AND BROILS BETTER AND EASIER
FOR BIG FAMILIES
FOR SMALL FAMILIES
FOR TRAILERS
FOR BEACH OR MOUNTAINS
FOR APARTMENTS
Electric Roaster Cooking Means a Cooler Kitchen in Hot Weather
REQUIRES NO WATCHING
ELECTRIC ROASTER Event $3 NOW AS LOW AS DOWN
CHECK THESE FEATURES
SEE THEM
AT YOUR DEALER OR EDISON OFFICE

LOOK
NOW AS LOW AS $3 DOWN
BRINGS YOU THIS MODERN ELECTRIC 'PLUG-IN' KITCHEN
for everyday cooking... at home, beach or cabin
It roasts
It bakes
It broils
ELECTRIC ROASTER Event $3 NOW AS LOW AS DOWN
COOKS BIG MEALS WITHOUT WATCHING
SEE THE NEW MODELS
NOW
AT YOUR DEALER OR EDISON OFFICE

Making Electric Roasters an easier-to-sell item

Comprehensive Edison advertising helps make profitable electric roasters one of the easier-to-sell appliances. Large space newspaper advertisements promote this modern "plug-in" kitchen in every community in Edison territory where there is an appliance dealer.

7-40

SOUTHERN CALIFORNIA Edison

ELECTRICAL WEST (with which is consolidated The Journal of Electricity), July, 1940. Vol. 85, No. 1. Published monthly by the McGraw-Hill Company of California, 68 Post Street, San Francisco, Calif. Entered as second class matter at the post office at San Francisco under the Act of March 3, 1879. Additional entry as second class matter at the post office at Los Angeles. Printed in U. S. A. Subscription rate in U. S. and U. S. possessions, and Canada, $2 per year; all other countries $3 gold (thirteen shillings). Single copy 25c.
Copyright, 1940. McGraw-Hill Company of California.

NOW AN OPEN-TYPE CUTOUT WITH Completely Housed Contacts

Cutaway showing double upper contacts and latch completely enclosed from the weather

A NEW fuse cutout with contacts fully protected against snow and sleet—against dirt, soot, salt fog, birds, and insects—offered for the first time. Here's the new G-E answer to an old housing problem—the new G-E way to greater service reliability and longer cutout life.

Higher mechanical strength has also gone into this design. The sturdy cast brackets and housings and the strong, wet-process porcelain insulator are all built for punishment.

Contacts are pure copper—electroplated with silver to maintain low contact resistance. During operation, a stainless-steel latch provides a short time-delay to allow the arc to be cleared within the fuseholder—the contacts do not have to interrupt short-circuit currents.

More important—the complete open-type fuse holders, either 50- or 100-amp, are interchangeable for all our new open-type cutouts of the same voltage ratings. There again, you get the advantages of G-E interchangeability in cutout design.

Get complete information on this remarkable new open-type—order a sample *now*—it's a major forward step in cutout design. General Electric, Schenectady, N. Y.

Cutaway showing completely housed lower contacts

50 and 100 amp, 7500 and 15000 volts
100 amp, 5000 volts

Described in Bulletin GEA-3438

GENERAL ELECTRIC

406-1

JULY, 1940 VOL. 85, NO. 1

Here in the WEST

People

P. M. Downing

to anyone who does not already know, is vice president and general manager of

Pacific Gas and Electric Co., San Francisco. Abstracts from his understanding talk on human relations, given before the Edison Electric Institute, are presented on page 19.

D. A. Hord

is superintendent of overhead transmission and distribution for Northwestern Electric Co. His career with

the company began in 1913 as a foreman of the crew which set the first pole in Portland. For 11 years, he has served utilities in California and Washington. Golf is his hobby. His 12 handicap is not nearly low enough, associates say.

J. F. Emery

is assistant superintendent of distribution for the Idaho Power Co. "Fletch" started with the company way back in 1918 as a power plant operator. From power plants he branched out into construction and worked in that field until 1927. With his background of operations and construction, he entered the distribution department where he has been for the last 13 years.

Emery assumes an air of modesty about his hobby of photography, though friends who have seen his camera work will vouch that very few poor negatives ever come out of his dark room at home.

Preview

IES Lamps

Today's military campaign started months ago in plan and preparation. So it is in

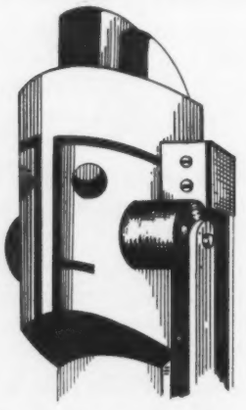
selling. The fall lighting season is just ahead. Plans for selling more IES lamps should be made well in advance. The Sales Guide for IES lamps will be in the August issue, where it can be used to prepare for a successful campaign against the forces of darkness. There is no blackout in America—let there be light.

Circuit Breakers

Simplified service entrance equipment seems to be one way to lower wiring costs. A quick view of what has been done in that direction will be taken next month.

ABC's of Relays

Interesting and instructive reading for every electrical man will be a series of short discussions, the first of which will appear next month, about relays. These will set forth in simple terms the anthropology, so to speak, of relays, although it is guaranteed that no such V-16 word will be used in the discussions. The articles are in response to widespread interest in these units which



do much of the brain-work for the electric system. The author is E. B. Kipp, relay specialist for Westinghouse. After reading what he has to say about the origin and development of relays, about how they are applied today, you'll probably agree they aren't so complicated after all.

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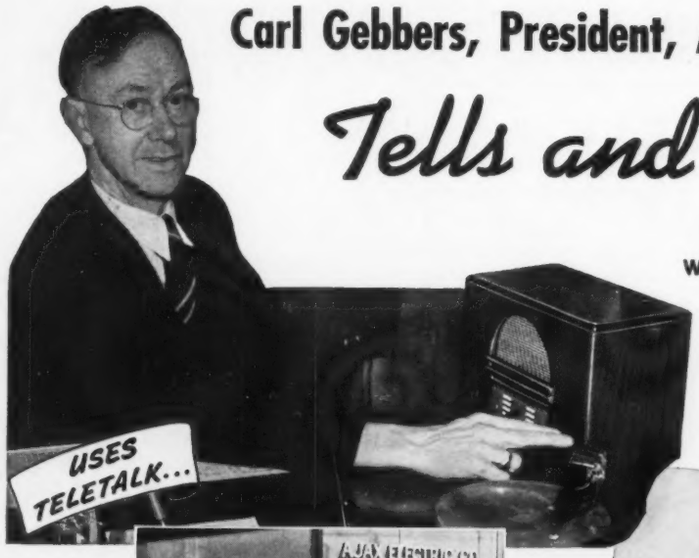
Carl Gebbers, President, Ajax Electric Company, Tacoma,

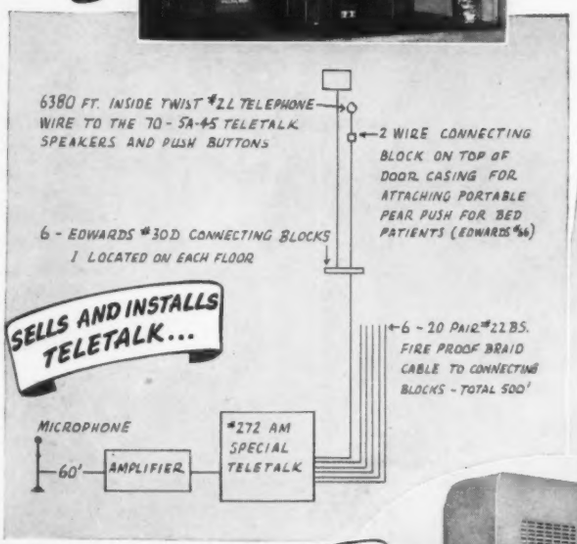
Tells and Proves that

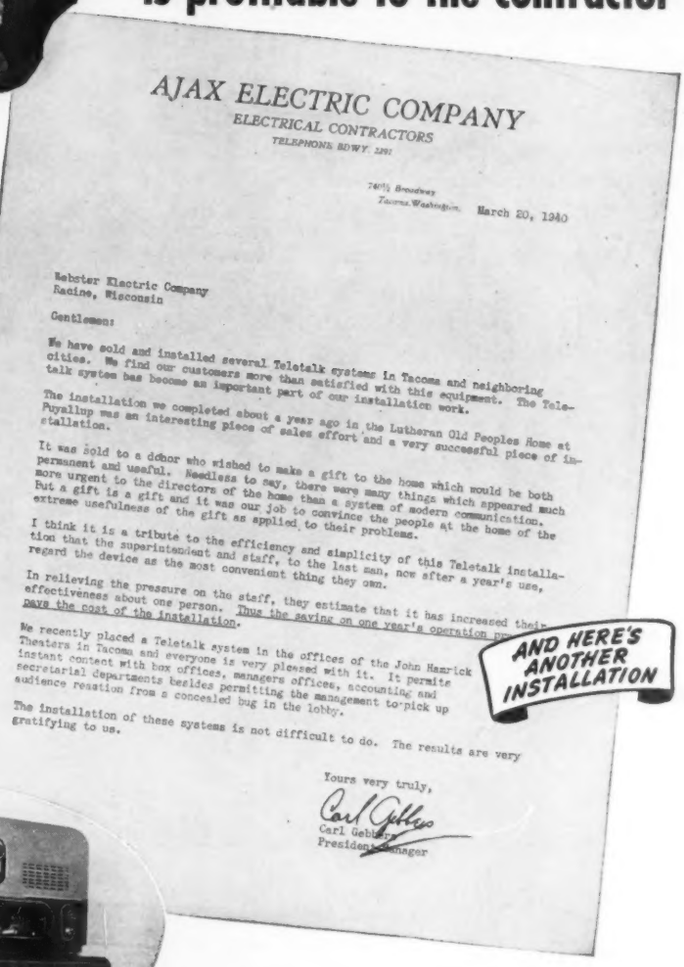
WEBSTER ELECTRIC Teletalk *Amplified Intercommunication*

REG. U.S. PAT. OFFICE

is profitable to the contractor




6380 FT. INSIDE TWIST #22 TELEPHONE WIRE TO THE 70 - SA-45 TELETALK SPEAKERS AND PUSH BUTTONS
2 WIRE CONNECTING BLOCK ON TOP OF DOOR CASING FOR ATTACHING PORTABLE REAR PUSH FOR BED PATIENTS (EDWARDS #56)
6 - EDWARDS #30D CONNECTING BLOCKS 1 LOCATED ON EACH FLOOR
SELLS AND INSTALLS TELETALK...
6 - 20 PAIR #22 BS. FIRE PROOF BRAID CABLE TO CONNECTING BLOCKS - TOTAL 500'
MICROPHONE
60'
AMPLIFIER
#272 AM SPECIAL TELETALK



AJAX ELECTRIC COMPANY
ELECTRICAL CONTRACTORS
TELEPHONE: BDWY. 2291

7401½ Broadway
Tacoma, Washington. March 20, 1940

Webster Electric Company
Racine, Wisconsin

Gentlemen:

We have sold and installed several Teletalk systems in Tacoma and neighboring cities. We find our customers more than satisfied with this equipment. The Teletalk system has become an important part of our installation work.

The installation we completed about a year ago in the Lutheran Old Peoples Home at Puyallup was an interesting piece of sales effort and a very successful piece of installation.

It was sold to a donor who wished to make a gift to the home which would be both permanent and useful. Needless to say, there were many things which appeared much more urgent to the directors of the home than a system of modern communication. But a gift is a gift and it was our job to convince the people at the home of the extreme usefulness of the gift as applied to their problems.

I think it is a tribute to the efficiency and simplicity of this Teletalk installation that the superintendent and staff, to the last man, now after a year's use, regard the device as the most convenient thing they own.

In relieving the pressure on the staff, they estimate that it has increased their effectiveness about one person. Thus the saving on one year's operation pays the cost of the installation.

We recently placed a Teletalk system in the offices of the John Hamrick Theaters in Tacoma and everyone is very pleased with it. It permits instant contact with box offices, managers offices, accounting and secretarial departments besides permitting the management to pick up audience reaction from a concealed bug in the lobby.

The installation of these systems is not difficult to do. The results are very gratifying to us.

Yours very truly,

Carl Gebbers
President & Manager

AND HERE'S ANOTHER INSTALLATION

Licensed by Electrical Research Products, Inc., under U.S. Patents of American Telephone and Telegraph Company and Western Electric Company, Incorporated

WEBSTER ELECTRIC COMPANY, Racine, Wisconsin, U. S. A.
Established 1909. Export Department: 100 Varick St., New York City
Cable Address: "ARLAB", New York City

Electrical Contractors who are not on the Webster Electric Teletalk "band wagon" are just simply passing up a big opportunity to sell a good product at a fine profit; to sell wire, conduit, junction boxes and other supplies, plus the highly profitable item of labor . . . Mr. Gebbers' story as set forth in this page is only typical of many others.

Webster Electric

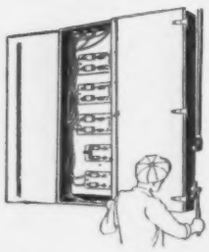
"Where Quality is a Responsibility and Fair Dealing an Obligation"

MANUFACTURERS OF TELETALK INTERCOMMUNICATION AND PAGING SYSTEMS • POWER AMPLIFIERS AND SOUND DISTRIBUTION EQUIPMENT • RADIO PHONOGRAPH PICKUPS • IGNITION TRANSFORMERS AND FUEL UNITS FOR OIL BURNERS

How To Save Hours Of Hard Work On Each Job . . . . .

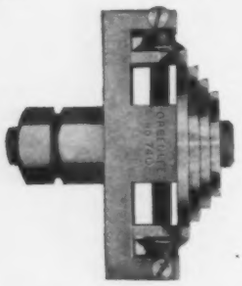
Greenlee Knockout Tools have been developed to do the job of enlarging holes easily in a few minutes. The hours of drilling, reaming, and filing, formerly required to enlarge holes on the job, are no longer necessary. These tools make the job so simple that a clean round hole to fit conduit up to 3-inches can be cut in a couple of minutes or less, by merely turning a drive nut with an ordinary wrench.

Greenlee Knockout Tools



The drawing at the left shows just one of the many uses of the Greenlee Knockout Tools.

The Greenlee Knockout Punch is made in various sizes to enlarge holes for conduit from ½ to 3-inch. Cutting is done by a two point punch, driven by screw action through the metal into a die of proper size.



The Greenlee Knockout Cutter shown here will enlarge holes to fit 1½, 2, 2½, and 3-inch conduit. This tool will cut easily through metal up to ⅛-inch thick in about 1½ minutes.

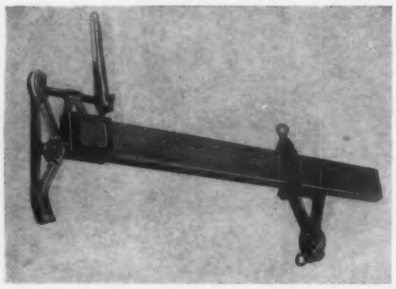
WRITE FOR COMPLETE DETAILS

GREENLEE TOOL CO.
1703 Columbia Ave.
ROCKFORD, ILLINOIS

NEW PRODUCTS

Carrier Device (701)

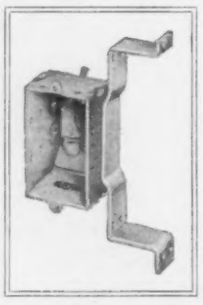
A carrier device has been designed by the A. B. Chance Co. for use in removing and replacing defective insulators on power line dead ends. The new design is for 10" insulators and may be used with 8" insulators, also. This tool has a ratchet wrench built into



it for use in taking up slack on strain insulators. An eye screw on the bracket makes it possible to lift the strain carrier into place by use of an ordinary disconnect stick or similar hot line tool. The entire unit is light in weight and easy to operate. Hardwood board provides the necessary insulation for safety to operator.

Switch Box (702)

Austin sectional switch boxes can now be furnished with the popular BR bracket permanently attached in several types. The bracket manufactured by the M. B. Austin Co., is ex-



actly the same as the BR-1, a mounting bracket. Legs are scored on the BR so that they may be broken off for close mounting to the stud.

Filter Queen (703)

The "Filter Queen," produced by Health-Mor Sanitation Systems, Inc., is a new departure from the typical vacuum cleaner. This small compact unit has no messy, dusty, unsanitary cloth bag to empty. Paper cones are inserted at each sweeping and these are destroyed and replaced with a fresh cone. There is a swivel nozzle with a sweep-action, floating brush that causes no friction or wear on rugs. "Filter Queen" provides a double cleansing, air-washing action. A touch of the toe on the foot-button of the receptacle is all that is necessary to put the "Filter Queen" in action.

STRENGTH, ruggedness and durability are combined with definite economy in *Crapo* Galvanized Steel Strand. Low first cost, low maintenance expense are matters of record wherever this time-tested product is in use. Available in all standard grades and sizes from representative jobbers throughout the country. Or, write—

INDIANA STEEL & WIRE CO.
MUNCIE, : : INDIANA

ECONOMICAL

Jeffries Transformers

Reasonable in Price
Reliable in Performance

Jeffries large transformers are priced reasonably—and you can save their first cost in a short time by minimizing current losses. When you use a Jeffries transformer, you can provide voltage change **at the point desired**, without prohibitive expense.

We supply all types and sizes. If not in stock, we build to order in a **hurry**—a week to 10 days.

Write today for catalog

JEFFRIES TRANSFORMER COMPANY
5706 Long Beach Ave. Los Angeles, Calif.

NEWS *for Engineers*

WHO WANT QUICK, EASY ASSEMBLY OF

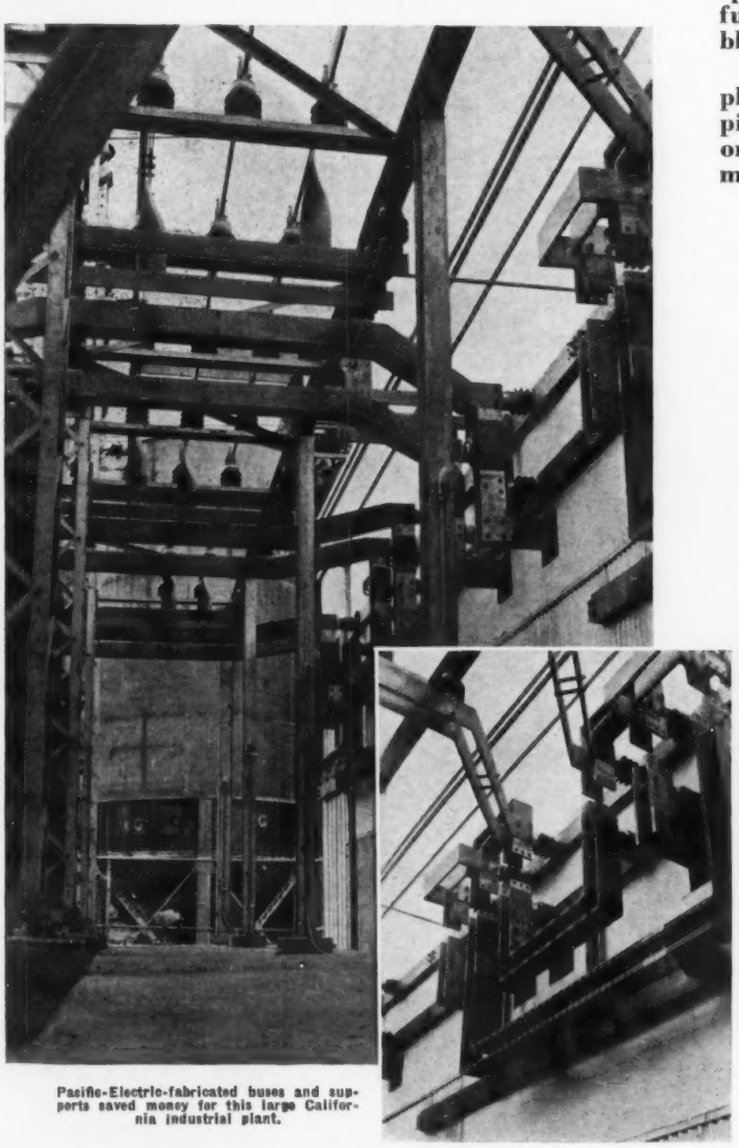
BUS FITTINGS

YOU may waste money if extra time is required on the job to assemble buses, bus fittings and their supports.

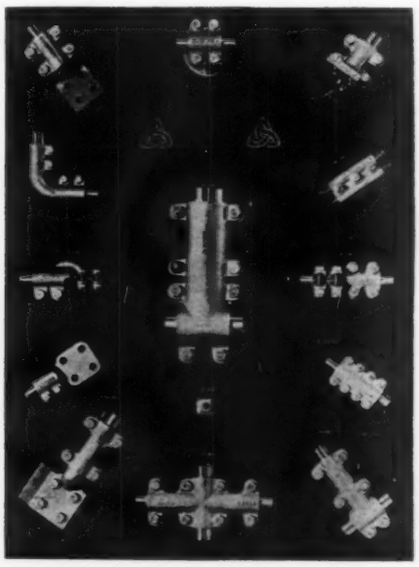
Here's how we give you reasonable first-cost and save money for you in the end.

At Pacific Electric, both heavy and light buses and supports can be fabricated, carefully cut and FACTORY DRILLED to meet rigid specifications. All bolts and clamps are skillfully fitted. That means quick and easy assembly—at a saving of time.

We saved money for one large industrial plant by providing special links (see insert of picture) which eliminated outdoor disconnects ordinarily used for cutting in spare transformers.



Pacific-Electric-fabricated buses and supports saved money for this large California industrial plant.



Where there's skimping on factory planning, money is wasted through time-consuming assembly.

We save you these losses for in our modern plant we specialize on a few "lines" and pass on the large-scale economies in the form of fittings cast from virgin metals and carefully made for each assembly. N.E.M.A. and A.I.E.E. Standards —of course!

Get all the facts—that's all Pacific Electric asks.

C. H. Cutter, 1006 Securities Bldg., Seattle, Wash. G. B. Kirkwood, 437 S. Hill St., Los Angeles, Calif. Urban Halliday, Denver, Colo., 230 U. S. Nat'l. Bank Bldg. Electric Steel Foundry, Honolulu, T.H.

Other Representatives in Principal Cities

Pacific Electric Mfg. Corporation

5815 Third St., San Francisco — *Representatives in Principal Cities* — Dunes Highway, Gary, Indiana

From the viewpoint of every man concerned with line construction and maintenance, Chance Anchors are a sound investment.

To management they mean line security — protection for capital invested in line construction.

To the purchasing department Chance Anchors get first consideration for many reasons — quality, dependability, price, adaptability to various needs, integrity of the manufacturer, and delivery service.

To construction superintendents the Chance complete line provides the right anchor for every job — dependable, economical results.

The Engineer relies on fact, fact proven by test. He knows that every Chance Anchor will do the job for which it is made because it has been proven.

To the store keeper Chance Anchors mean a complete, all round, stock from a single source of supply; an anchor for every requirement and a stock easily checked by Chance metal tags.

The line foreman selects Chance Anchors because he can be assured of a job well done in minimum time.

To the lineman Chance Anchors represent a better job with less effort—an anchor to meet each specific requirement, easier installation, easier handling and better results.

Build Security into your lines. Select your anchors from the complete Chance line of 18 types and 75 sizes.

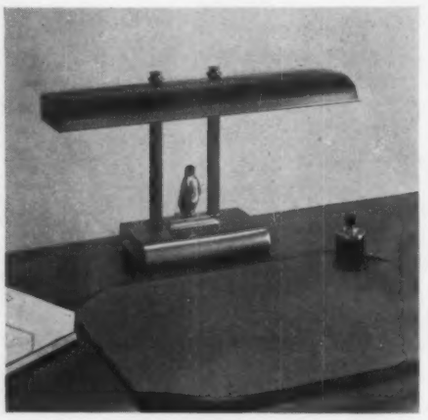
A·B·CHANCE CO. Utilities Division
CENTRALIA MISSOURI

Metered Hot Plate (704)

A coin-operated, time-metered electric hotplate is a unique innovation that is being introduced to public parks, playgrounds and other recreational areas by the Welcome Meter Co. It offers the out-of-doors public, clean, modern cooking facilities on a pay-as-you-use basis. It has received the endorsement of fire-prevention and maintenance officials as its use eliminates fire hazards, and fuel and waste disposal problems which accompany the use of open fires.

Lumidor Lamps (705)

A complete line of portable desk and commercial fluorescent lamps, beautifully styled and scientifically designed is offered by Lumidor Mfg. Co., Inc. Spread-lite reflectors in these models distribute light evenly over the working surface thereby eliminating any glare or concentrated light areas. Both 50 and 60 cycle units are at the same price. Longer bulb life is assured. The Admiral (illustrated) model is an ideal executive desk lamp, is finished in old English bronze plate, with an adjustable shade.



Portable Substation (706)

A line of factory-built, trailer-mounted, portable substations complete with protective and switching equipment has been manufactured by General Electric. The new line is expected to provide power companies with a convenient means of supplying service quickly at any point on their distribution circuits where emergency service is required or where temporary loads demand increased capacity. To give the desired balance between size, weight and output, two general types of portable substations are provided—one using a self-cooled transformer and the other a forced-cooled transformer. Installation of the new unit is merely a matter of parking and grounding the unit in a convenient location, elevating the retractable high-voltage disconnecting-switch structure, and running conductors to the high-voltage and low-voltage lines. To prevent accidental contact, the accessible external live parts are screened. All compartments, valves, and operating handles can be locked to prevent operation by unauthorized persons.

Home-cooler Fan (707)

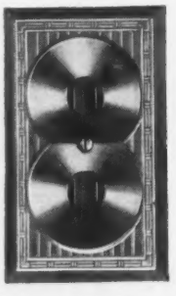
A home cooler fan has been presented by the Wagner Electric Corp. It has high-capacity, and is belt type in three sizes: 10,500 to 20,500 cfm. for complete home cooling (attic installation) and for industrial and commercial use where it is desired to move a large volume of air with a minimum of noise. The unit is so constructed that it can be quickly and easily taken apart and reassembled in the event that it is necessary to take it through a small opening.

Adjustable Bar Hanger (708)

An adjustable bar hanger has been introduced by the Appleton Electric Co. This hanger is new in design and allows for an extra sturdy installation with most styles of outlet, ceiling and cable boxes. It does not interfere with cable, conduit or wires and is equally useful for conduit, cable or knob and tube work. Made in one complete unit —no detachable parts—the bar is easily installed.

E-Z Find Receptacle (709)

The E-Z-Find receptacle, now manufactured by the Arrow-Hart & Hegeman Electric Co., is a new departure from the conventional convenience outlet. With this unit, it is easy to find the contact slots with any plug cap. The curved or dished surface of the plate slides the plug prongs to the exact position from any point in a wide area. The center trap indicates by a definite drop that the plug has been centered and should be turned to the contact slots.



For Cable Splices and Terminals

OKONITE & MANSON

TAPES & RUBBER CEMENT

. . . make perfect joints and terminals. Since one bad joint or terminal can ruin the best wiring system it is folly to "economize" on splicing materials when the difference in cost between a perfect and a bad joint is negligible. Okonite and Manson Tapes have been used by electrical men for over 50 years because they have high adhesiveness and strength. In combination they make a moisture-proof seal that will last as long as the conductor insulation.

Write for Booklet OK-2006 which shows with diagrams how to use them to best advantage.

THE OKONITE COMPANY

Founded 1878

EXECUTIVE OFFICE: PASSAIC, NEW JERSEY

HAZARD INSULATED WIRE WORKS DIVISION

THE OKONITE-CALLENDER CABLE CO., INC.

SALES OFFICES IN PRINCIPAL CITIES

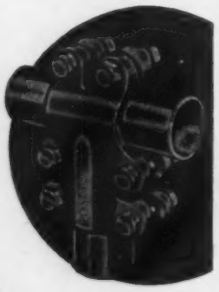
OKONITE QUALITY CANNOT BE WRITTEN INTO A SPECIFICATION

ALL Kinds of Fittings—

for every type of electrical connection. For any combination of tube, bar, cable, or wire.

More than 6,200 items.

Clamp Type Tees in all sizes. High copper alloy; machined contact surfaces



Self-Locking Tees that hold permanently tight. With and without extension.

Reducer Connectors for different sizes of cable. High copper with Everdur bolts, nuts, lockwashers.

You will be interested in the many NEW and IMPROVED fittings in the Penn-Union Catalog. Every item thoroughly tested, Dependable.

NICHOLAS & COOK
1063 HOWARD STREET
SAN FRANCISCO

J. W. WATKINS
538 SKINNER BLDG.
SEATTLE

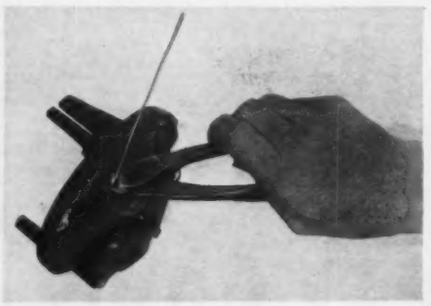
PENN-UNION ELECTRIC CORP., Erie, Pa.

You'll find it in the *complete* line

PENN-UNION
Conductor Fittings

New Splicing Method (710)

A new method of splicing additional lengths of wire on the leads of a meter current coil to make the leads long enough to be connected to the binding posts of a "CS" case has been developed by the National Telephone Supply Co. This is in connection with one phase of rebuilding an



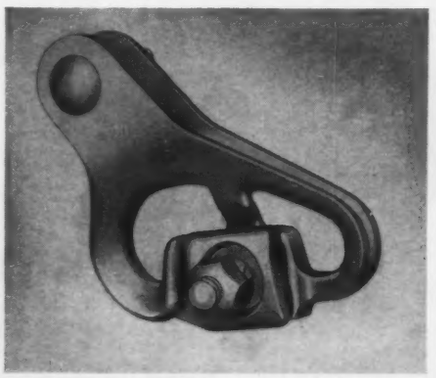
indoor meter into an outdoor case. The application of the Nicopress splicing method assures a real saving in time, and in instances where a number of meters are to be converted, a material saving in costs.

Window Ventilator (711)

Poor ventilation in offices, homes, hospitals, hotels, and industrial plants can be eliminated through the use of Ad-Lee electric window ventilators. Priced low, this window ventilator provides excellent air circulation under rain, wind and "dead" air conditions. It removes a greater portion of dust and pollen, dissipates smoke and odors, subdues outside noises, is particularly useful to hay fever sufferers. Complete in itself, this unit can be fitted to any window, and is furnished to operate from an a. c. or d. c. outlet.

Strain Clamp (712)

Several improvements have been incorporated in its smallest strain clamp, known as the Baby Universal, by the Ohio Brass Co. These changes make the clamp easier to install, increase its holding power, permit accurate conductor alignment and add to the mechanical strength. The nose of the clamp has been extended beyond the clamping



portion to form a loop which serves as a convenient anchorage for the hook on the block and tackle normally used for sagging line conductors. It accommodates 0.145 to 0.350-in. conductors.

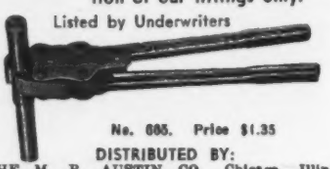
TELESCOPE BM SYSTEM

CONNECTORS AND COUPLINGS
Cadmium Finish
for Electrical Metallic Tubing

B-M Connectors and Couplings make the neatest installations. No nuts to tighten, just two squeezes with our Indenter and the fitting is securely fastened to the tubing.

B-M fittings are so much lower in price that the savings on the first job will more than pay for the Indenter required. Our tools and method of fastening the fittings to the tubing are patented, and we limit the license of our tools under these patents to the installation of our fittings only.

Listed by Underwriters



No. 685. Price $1.35

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With the famous Powder-Packed Element

KLIPLOK CLAMPS
Lock fuses and clips together

KANTARK FUSES
With genuine fibre tubes (not paper)

COLORTOP PLUG FUSES
The color tells the size

FUSE PULLERS
Pull and replace fuses safely

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For motors, line shafts, solid bearings etc

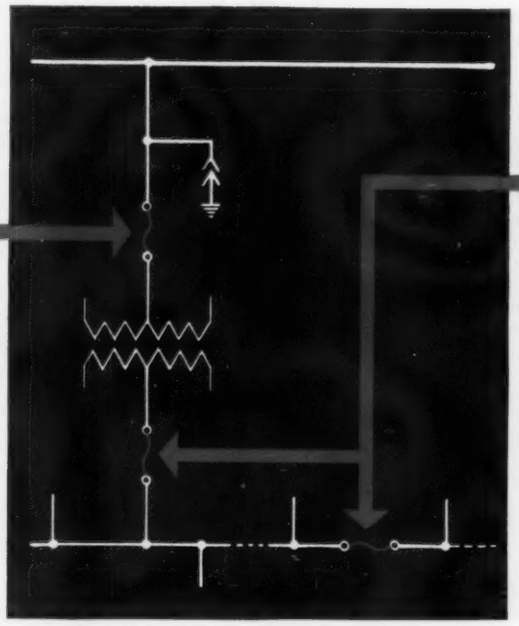
UNBREAKABLE OILERS
"Opto-Matic" Constant level type
Gravity Feed type

WRITE FOR FOLDER CPF-300

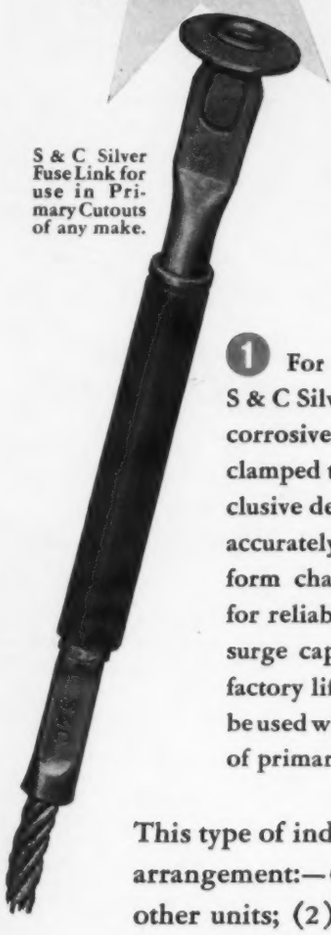
TRICO FUSE MFG. CO., Milwaukee, Wis.
M. L. Woodard, 367 9th St., San Francisco
W. E. Young Co., 1944 Broadway, Denver

TWO PLACES YOU NEED GOOD FUSING

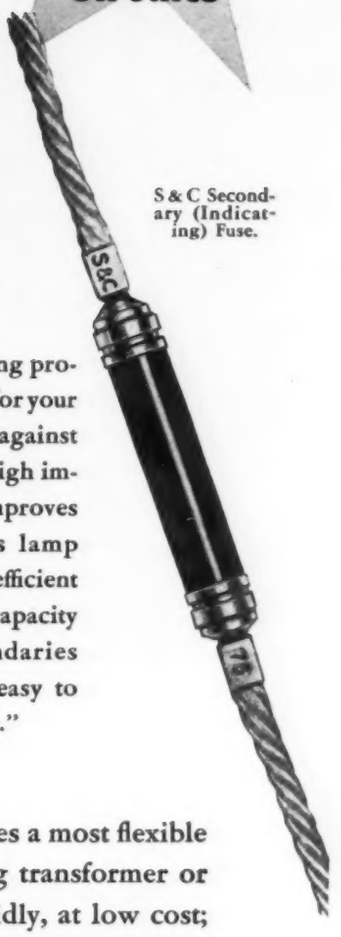
1
In the Primary Leads of the Transformer



2
In the Secondary Circuits



S & C Silver Fuse Link for use in Primary Cutouts of any make.



S & C Secondary (Indicating) Fuse.

1 For primary protection use S & C Silver Fuse Links. The non-corrosive silver fuse element—the clamped terminals—and other exclusive design features provide an accurately-calibrated link of uniform characteristics so essential for reliable coordination, greater surge capacity, and longer satisfactory life. S & C Fuse Links may be used with S & C and other makes of primary cutouts.

2 S & C Secondary Fusing provides (a) better protection for your distribution transformers against excessive peak loads and high impedance faults,—and (b) improves your regulation, reduces lamp flicker, and permits more efficient use of your transformer capacity by "banking" the secondaries through fuses. They are easy to install and are "Indicating."

This type of independent primary and secondary protection makes a most flexible arrangement:—(1) Any unit can be re-fused without disturbing transformer or other units; (2) In case of trouble, service can be restored rapidly, at low cost; (3) Primary cutout can be used to disconnect transformer from primary circuit; (4) Fuse ratings may be changed readily when required by coordination plan.

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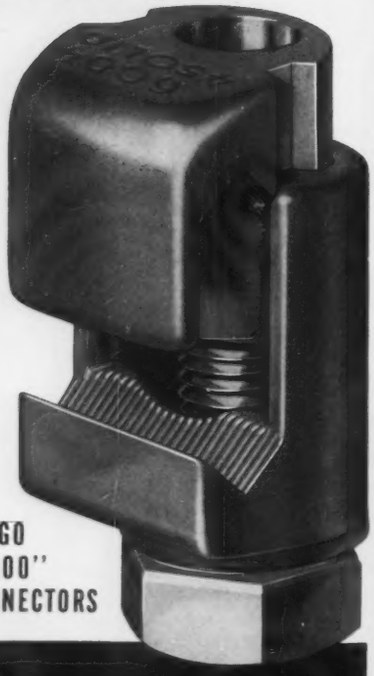


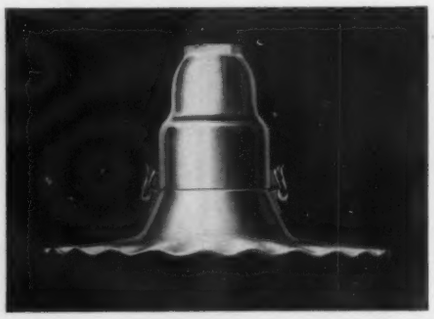
FARGO "6000" CONNECTORS

Distortion-proof Fargo "6000" Connectors retain their streamlined "figger" and bulldog grip under highest service pressures. They're built for repeat use . . . handle as easily, grip as firmly after years of service as the day you take them out of the carton. Specify Fargo "6000" in your next connector order, you'll use them over and over again. No. 6 and No. 4 now available; additional sizes at a later date.

MADE BY FARGO MFG. CO.
DISTRIBUTED BY
LINE MATERIAL CO.

Radial Bowl Reflector (713)

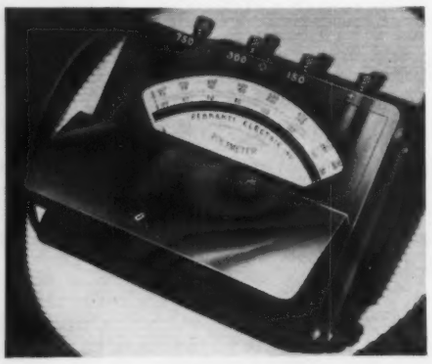
A radial bowl reflecter has been developed by Line Material Co. for use in the growing number of instances where it is desirable to have radial bowl reflectors that are interchangeable with the concealed light-source type of luminaire. No adapters or special



parts are needed to attach the reflector directly to the standard Spherolite hood. The reflectors are 20 in. in diameter, and are available in both Alzak aluminum and vitreous enamel.

Portable Voltmeter (714)

A triple range a. c. portable voltmeter has been placed on the market by Ferranti Electric Inc. This unit is a precision testing instrument for industrial and central station use, and for all service and field testing work. It is designed for a. c. cir-



cuits, but may be used on d. c. circuits with slight sacrifice to accuracy. It meets Army and Navy specifications and conforms to AIEE and NEMA specifications.

Kelvinator Washer (715)

Announcement of a new 1940 model washer, the 6-DS, has been made by Kelvinator. It is designed to give dealers a low-priced model with the exclusive Fabric-Saver wringer, according to Frank R. Pierce, general sales manager, who says that more washers are sold on the wringer than any other feature. A slight pull on the pressure pilot lever, which is located on the right side of the wringer, starts the rolls and adjusts the tension, giving exactly the right pressure for woolens, silks and rayons, and cottons and linens. A high 3-vane type aluminum agitator, equipped with special bronze bearings on the center post and in the bottom of the unit, insures safe, quiet operation in the 6-DS. The model has a washing capacity of 8 lb., and is built to take an automatic drain pump as optional equipment.

Open Fuse Cutout (716)

An open fuse cutout for use on distribution circuits of 15,000 volts and below is now available through General Electric. The new unit features a totally enclosed contact construction for protection against snow and dirt, corrosion caused by weathering, and the formation of ice on the contacts. The toggle mechanism and lower contact are also enclosed. The cutout also incorporates such features of the superseded unit as the recoil-proof fuseholder, which prevents unseating of the fuseholder, seamless fuse tube, and interchangeable fuseholders.

Lamp Holder (717)

A portable holder for reflector lamps that may be adjusted to any direction and angle by releasing and tightening a single thumb screw has been devised by the Sterling Reflector Co. The Spot-O-Lite, as this holder is called, may be set on the floor, display

counter, or shelf, as well as mounted on the wall, ceiling, or outlet box. It is small, with nicely balanced design, and equipped with cord and plug.

Hotpoint Refrigerator (718)

A new 4.2 cu. ft. Hotpoint refrigerator, known as the special Bungalow model, has been introduced by Hotpoint's refrigerator division. This new model is particularly adapted to apartment installation. Both inner and outer shells are of one-piece steel construction; the outer shell is bonderized; inner shell finished in porcelain enamel. All exposed hardware is of chrome-plated brass. The vacuum sealed Thriftmaster, with unloader valve and overload control, is a larger size than previously used, giving extra power and efficiency.

Double-End Outlet Box (719)

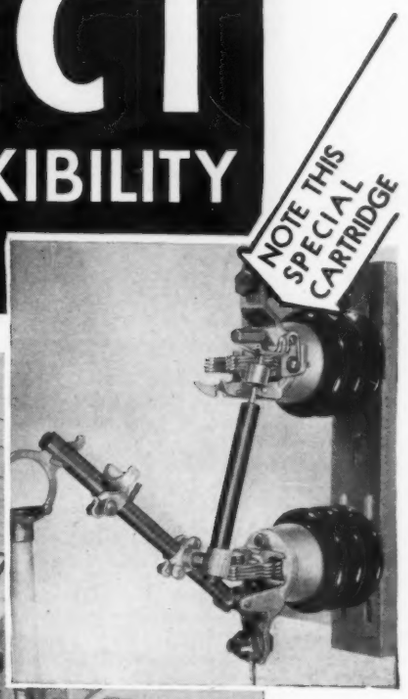
To simplify the installation of switches and outlets in the thin wall partitions found in modern hotels and apartment houses, a double-end outlet box has been developed by General Electric appliance and merchandise department. The new box is made up of shallow covers, and a redesigned extension ring. The combination of two of the covers with the ring permits the installation of two switches or outlets beside each other in the same box, but facing in opposite directions. Two rooms can be supplied in this way from a single run of conduit or cable.

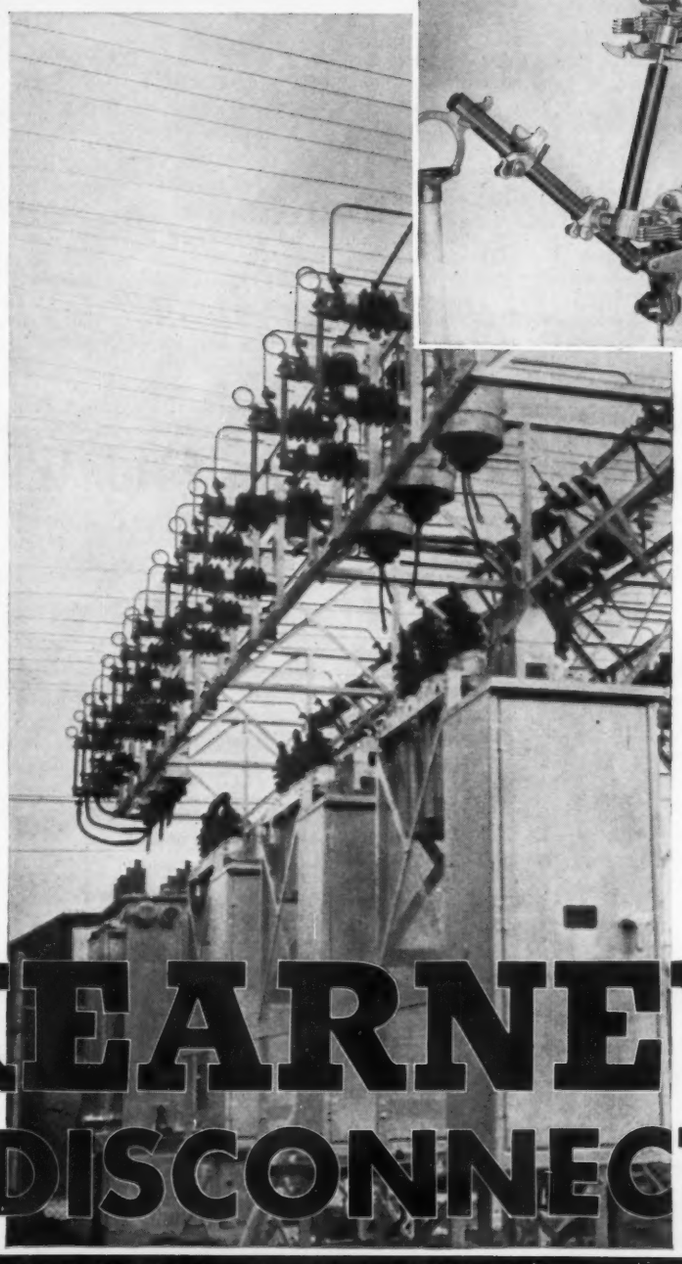
KEARNEY HOOK OPERATED DISCONNECT SWITCHES PROVIDE FLEXIBILITY IN POWER SYSTEMS

YOU need greater flexibility to provide for increasing loads of today and the future . . . And Kearney engineers have designed two classes of hook operated disconnect switches to meet your needs, along with an arc-extinguishing cartridge which operates in conjunction with several of the Kearney N. E. M. A. type disconnects. In the large illustration, notice the neat, compact installation of modern Kearney Switches. Although these switches come equipped with multi-point pressure contacts, station post insulators and tubular blades, they are also available, if specified, with shoe-type contacts, pin and cap insulators and truss-type blades.

The small illustration shows the Kearney Arc-Extinguishing Cartridges designed to eliminate excessive arcing at the main contacts by temporarily providing a path for the line charging current while the main disconnect blade is being opened. This feature may be provided for Kearney N. E. M. A. type disconnects with ratings through 15,000 volts, 600 amperes and Sub-N. E. M. A. rated through 15,000 volts, 400 amperes.

If you are planning on obtaining greater flexibility in your system by the use of disconnect switches, acquaint yourself with the advantages which Kearney Disconnects provide to obtain efficiency in interrupting current.





Use HOOK OPERATED **KEARNEY DISCONNECTS**

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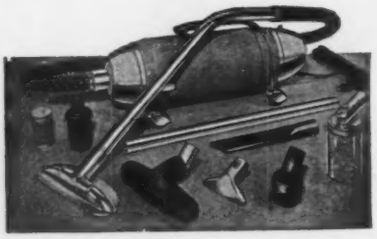
LOS ANGELES • SAN FRANCISCO • PORTLAND • SEATTLE • PHOENIX • RENO • TACOMA • SPOKANE

Cylinder Type Cleaner (720)

Full time production on a new cylinder-type vacuum cleaner to be known as the "Sanitaire," has been announced by the Hamilton Beach Co. This all-purpose cleaner has many features, among them an exclusive rug nozzle with magic finger, and suction regulators on extension tube and upholstery nozzle; four-wheel carriage with



swivel wheels in front, and full rubber mounted floor and wall brush with special swivel joint. The unit is powered with an oversize Hamilton Beach a. c.-d. c. motor, full rubber-mounted front and back.

Lightning Arresters (721)

A new line of Type "LV" unit design lightning arresters covering the range from 20-kv. to 73-kv., and designed primarily for the small substation where reliable protection at low cost is the watchword, has been introduced by Westinghouse Electric & Mfg. Co. Complete arrester units 20, 25, 30 and 37 kv. consist of three-inch diameter porous elements, and a multiple series gap of resistance type spacers, and metal electrodes. Entire assembly is encased in wet process porcelain, hermetically sealed.

Shelvador (722)

A new 8 cu. ft. Shelvador, called the Summer Special, has been presented by the Crosley Corp. It has the famous Crosley features, such as the Shelvador, the Freezor-cold, Electro-Saver power unit, special removable section of the bottom shelf to provide space for tall bottles. Oven-proof pottery is being given with this refrigerator as an added sales stimulant.

Lineman's Climber (723)

Using a new design which elimates use of any unnecessary metal without any sacrifice of safety, Mathias Klein & Sons have developed a streamlined linesmen's lightweight climber. This climber is forged from special bar steel, heat treated for maximum toughness and strength. It is equipped with a special ankle strap ring which permits easy removal of an old strap and attachment.

Automatic Lubricator (724)

A new line of visible, automatic lubricators has been introduced by the Trico Fuse Mfg. Co. to replace old-fashioned oil cups. Daily hand-oiling is eliminated, oil supply is always visible, feed is automatic, bearing is flushed thoroughly after each filling, repairs, power losses and fire hazards are reduced, no adjustments are necessary, and bearing life is increased.

New Thermador Range (725)

The Admiral, newest in the family of Thermador electric ranges, features the new master pilot light located on the switch panel that indicates at a glance when all surface and oven switches are off; three fast heating economical surface units with special easy-to-clean construction; automatically illumi-

nated baking oven, equipped with non-tilt racks, oven vents, a smokeless broiler, deep well cooker; large utility drawers for storage space, and finished in white porcelain enamel with satin chromium plated trimmings.

Burndy Connectors (726)

Electrical connectors, recently presented to the field by Burndy Engineering Co., Inc., are designed to permit expansion or contraction of a tap conductor at any angle to the overhead bus or transformer stud. They will "warp" with the substation, but will not flop about loosely. At the same time they will preserve all the advantages of rigid construction. They provide a completely universal joint with ball-and-socket alignment guides incorporated in both stud connector and flexible T-connector.

REMEMBER—They're "NATURALS"

for Splicing and Dead-Ending Your Power Distribution Lines . . . .

Nicopress

Tools—

No. 41 Nicopress Tool

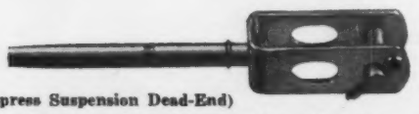
Splicing Sleeves

(Nicopress Sleeve)

(Completed Nicopress Splice)

and Suspension Dead-Ends

(Completed Nicopress Suspension Dead-End)



(Nicopress Suspension Dead-End)

They Meet Every Requirement and SAVE YOU MONEY.

Order Today From Your Jobber

THE NATIONAL TELEPHONE SUPPLY CO.

5100 Superior Ave., Cleveland, Ohio

Canadian Manufacturer—N. Slater Co., Ltd., Hamilton, Ont.

Export Distributor—International Standard Electric Corp., New York, N. Y.

PRODUCT DATA

Wheelco Bulletin (727)

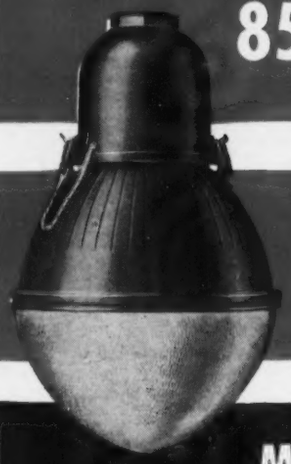
Thermocouples, thermocouple wire, lead wire, insulators, protecting tubes and their accessories are presented in a new bulletin by the Wheelco Instruments Co. These units may be used with all standard types of pyrometers and temperature controllers. Several pages are devoted to recommendations for selection of this particular type of equipment.

Jefferson Folder (728)

Door bell, chime and signalling transformers are described in a new 8-page folder prepared by the Jefferson Electric Co. This booklet illustrates the various products and gives detailed information on each device.

80% MORE LIGHT ON THE ROADWAY

85% LOWER GLASSWARE BREAKAGE



WITH THE G-E FORM 79

MADE POSSIBLE BY THIS MODERN DESIGN

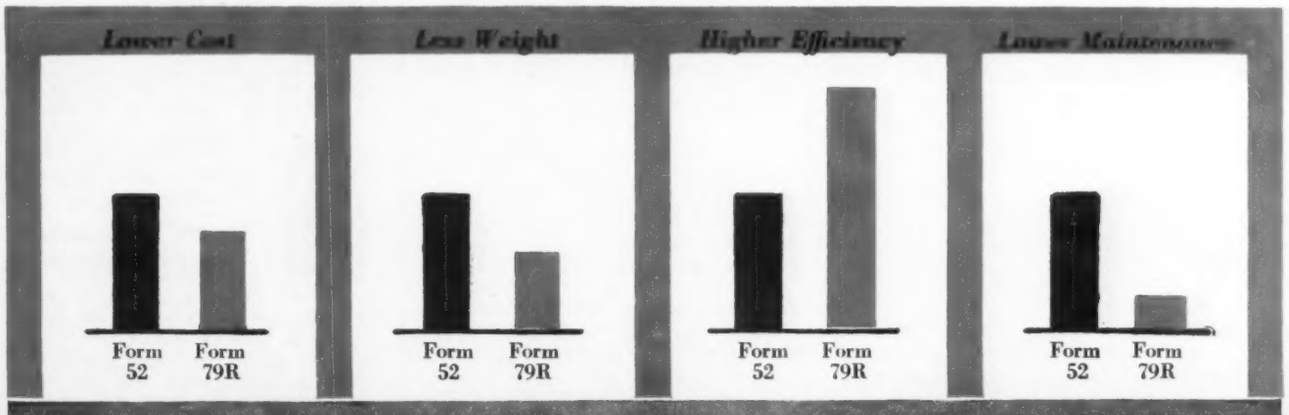
PROVIDING adequate light for the nation's streets and highways demands low-cost high-efficiency street lighting units. The Form 79 luminaire, made possible by modern design, using Alzak* finished aluminum, with its deep-shading reflector, delivers as much as 80 per cent more glare-free light on the pavement than the best of previous luminaires.

Only General Electric has spun-sealed glassware—the aluminum reflector and globe permanently sealed together to eliminate gaskets and prevent the entrance of dust and insects. This exclusive feature also reduces glassware breakage because the lip of the globe, or refractor, is completely protected against chipping and damage when the luminaire is being relamped. The New York State Electric and Gas Corporation reports only 4.63 cents per luminaire a year for globe replacement—typical of hundreds of other operating companies that have installed Form 79's.

*Manufactured under Aluminum Company of America patents.

Decide now to use G-E 79's on your next installation. Any one of its ten exclusive features will give you extra benefits. General Electric Company, Schenectady, New York.

PROOF THAT THE G-E FORM 79 IS A BETTER BUY



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Sell THE UNIT WITH SELECTIVE COOKING AREAS

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Sell the ranges with the right cooking area for every size utensil—No wasted heat when using small utensils. This is the famous *Two-Units-in-One* feature, *exclusive* with Chromalox units. Sell ranges with these units. Use them for replacement, too. They fit all ranges. Write for the whole sales-boosting story—"How to Sell More Ranges."

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1921 Blake St., Denver, Colo.
EDWIN L. WIEGAND CO.
7540 Thomas Blvd., Pittsburgh, Pa.

Emerson Fans (729)

Cataloging the most complete selection of fans in their entire 50 years in the electrical industry, the Emerson Electric Mfg. Co. present their Golden Jubilee Portfolio. All types of fans, for both home and industrial use are illustrated and full information given. New and improved styles of fans are pointed out. Many actual installations of Emerson fans are offered.

Distribution Transformers (730)

The story of their latest distribution transformers is told by Allis-Chalmers Mfg. Co. in a 16-page illustrated booklet. These units are in ratings of 1½ to 25 kva. and standard voltage classes are 2400 to 7620 volts. Principal design features are shown, together with an excellent series of construction pictures.

Raceways (731)

Inch-marked electrical raceways are discussed in a 4-page booklet published by the Steel & Tube Division of Republic Steel Corp. Called the "Electrunite" these steel tubes make electrical installation easier, more accurate, more economical, and may be used with a new Electrunite bender. Complete bending instructions go with very bundle of these tubes.

Lighting Fixtures (732)

A 68-page catalog has just been issued on residential lighting fixtures manufactured by the Chase Brass & Copper Co. lighting division. Beginning with a consideration of points before lighting one's home, the publication describes "Even-Glow" fixtures, shows examples of good and bad lighting, lists and illustrates each fixture and gives complete information about it. Decorative fixtures are covered, also fixtures with colored glassware and hall fixtures, beam lights and lanterns.

Connector Guide (733)

An electrical connector guide, the first of its kind, has been published by the Burndy Engineering Co. This publication is a handy method for making a survey of existing conditions in your electrical connections. It includes a complete guide for the proper selection of electrical connectors.

Disconnects (734)

Hook-operated disconnects are described in full detail in a new 8-page publication issued by the Pacific Electric Mfg. Co. Various features are highlighted, installation pictures included, and tables of dimensions and cross sections of the different types given.

P. F. Correction (735)

Increasing use of fluorescent lights is bringing wider recognition of need for power factor correction. An analysis of this condition with a discussion of simple means is given in a bulletin just issued by Cornell-Dubilier Electric Corp. Entitled "Capacitors for Power Factor Correction of Fluorescent Lamps," this bulletin presents typical fluorescent lamp circuits with suggested connections for correction capacitors, and tables showing the capacitor values required for different degrees of correction.

O-B- Plan (736)

A plan which simplifies the selection of O-B switch and bus insulators has been presented in a handsome new 28-page bulletin by the Ohio Brass Co. Excellent illustrations aid in the presentation of this plan. Various tables and charts also assist in making this booklet highly desired by those interested in such equipment.

Bowling (737)

"Bowling—A Year Round Sport" is the title of an attractive, illustrated publication published by the Carrier Corp. It tells how bowling activities do not have summer slumps in air-conditioned recreation halls. Actual experiences of five Carrier air-conditioned bowling alleys are summarized.

ELECTRICAL TESTING LABORATORIES

Electrical Photometrical, Chemical and Mechanical Tests. Inspection of Materials and Apparatus at Manufactory.

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G.C.A.
Lamp Replacers
Lamp Base Removers
Cartridge Fuse Tongs
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Send for Catalogue
We have been making safety tools for 24 years
THE G. C. A. Manufacturing Co.
Pittsfield, Mass.

TORK CLOCKS

THE POPULAR TIME SWITCH LINE KNOWN EVERYWHERE

NOW—lower prices and higher capacities

There is a Tork Clock for every regular switching job; 60 minute, 4 hour or daily cycles.

Bulletins on request

THE TORK CLOCK CO., Inc.
MOUNT VERNON, N. Y.

Representatives:
A. R. Slimmon, 445 E. 3rd St., Los Angeles
Geo. H. Curtiss, 540 McAllister St., S F.
H. M. Sayers, 1019 Eastlake Ave., Seattle
Stevens Sales Co., 41 P. O. Place, Salt Lake City

Wiremold Guide (738)

A 40-page catalog and wiring guide has been presented by The Wiremold Co. Surface wiring systems, fluorescent lighting and lumiline lighting equipment, plugmold multi-outlet assembly, pancake overfloor wiring system are covered completely. Most units are illustrated and cross section of many of them included. Installation instructions are also given.

Indoor-Bus Supports (739)

A new 28-page illustrated booklet which describes and lists a complete line of standard indoor-bus supports for use on voltages of from 600 up to 23,000 volts has been published by Westinghouse. Contained are full descriptions, listings, rating data, pictures, and dimensions of the complete line of the Type H, the modified hollow square, and low voltage single unit bus-bar supports. Ninety-three distinct and separate bus supports are listed, 52 of this number being available in three voltage ranges. Short circuit current stress reduction by use of spring mountings on channel busses is discussed.

Industrial Fixtures (740)

A general catalog, covering the newest developments in industrial lighting, floodlighting, etc. has been issued by The Goodrich Electric Co. This 244-page catalog also covers the complete line of industrial fixtures. Of particular interest to users are the numerous installation photographs. A 45-page section is devoted to engineering data, complete with lighting plans, light distribution charts, mounting charts to serve as an aid in the proper planning of lighting systems.

Adequate Wiring (741)

"Are You Sure Your Plans Are Complete?" is the title of an excellent adequate wiring promotion piece issued by Pass & Seymour, Inc. Going through an average household, this booklet asks questions of each room, guides the homebuilder and helps him to solve problems of wiring and better lighting. Valuable suggestions are included with each room, and illustrations help to point out inadequacies and proper wiring.

Cables (742)

Two new booklets have been issued by the American Steel & Wire Co., one on paper insulated power cables and another on Amerbestos (asbestos insulated wires and cables). These publications give general characteristics, show this type of equipment in action, present specifications and standard practices of cables, and give numerous tables of approximate weights and dimensions.

Fluorescent Use (743)

In 46 pages of charts, diagrams, tables and photographs, the Benjamin Electric Mfg. Co. have presented facts and data needed to determine how and where to use fluorescent lighting to best advantage in factory, office or store. This new bulletin contains complete descriptions, specifications and listings of Benjamin fluorescent lighting equipment. Illumination data accompanying each lighting unit comprises easy-to-read tables of ft.-candle intensities for various mounting heights and spacing arrangements of general lighting installations.

Pole Line Hardware (744)

An attractive 72-page catalog on pole line hardware and specialties has just been issued by the Electrical Manufacturing Co. Cross-arm braces, steel arms, guying material, anchor rods, insulated clevises and forks are among the variety of products offered by this company in this booklet. Full information is given on each unit together with a line drawing of it.

Telemeter System (745)

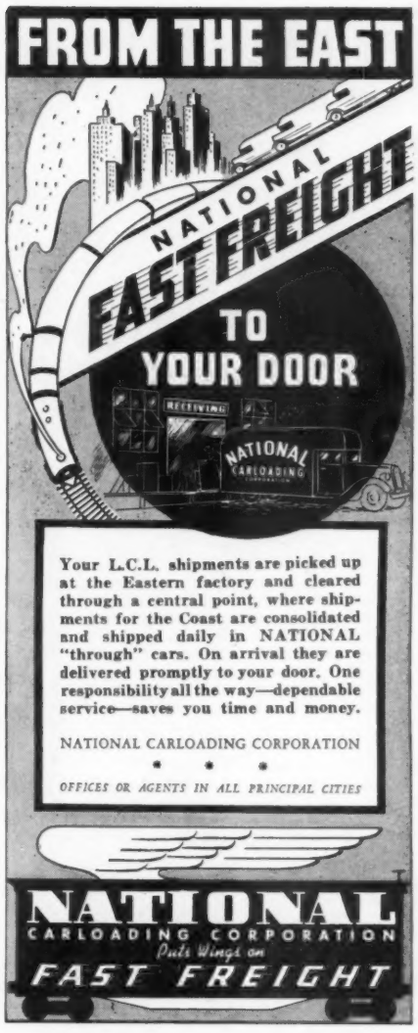
A telemetering system now offered by the Esterline-Angus Co., Inc. is a device which enables a measurement made at one place to be repeated at a distant point. This bulletin describes the basic principle, the operating characteristics and some of the uses of this system. General arrangement of apparatus is given, circuit and mechanical details. A summary of features concludes the booklet.

Hot Line Tools (746)

A hot line tool catalog has just been released by A. B. Chance Co. It is indexed for quick reference and is of the loose-leaf type, containing a complete listing of all Tips hot line maintenance equipment, grounding equipment, hot tap clamps, and fuse tappers. A section of the book is devoted to the methods for doing hot line maintenance work.

Fluorescent Fixtures (747)

More information on their line of fluorescent fixtures is presented by Daybrite Lighting, Inc. in a new bulletin. This is a comprehensive and complete piece of literature covering the fluorescent light strip, including its many phases and variations of applications. The publication is well illustrated.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* Please include your company's name and your position, as we cannot ask manufacturers to furnish literature unless you do.

ELECTRA'S HUSBAND

Fifth Columns

"DO YOU know any fifth columnists?" Electra asked as I snapped off the switch on the radio after listening to a particularly exasperating 7:30 short-wave news broadcast direct from Berlin. It would be fifteen minutes before London came on the air and it had become our habit during this interval to talk "war."

"No, not in the sense you mean," I answered. "But I've had my suspicions about the patriotism and sincerity of some of the people in high places. Their kind of fifth column activities may prove just about as damaging to the moral fiber and stability of this country as the Blum 'new deal' did to France. But why do you ask?"

"Well, when we were playing bridge today, Hilda Schroeder said she knew some right here in town," she replied. "Hilda vowed you would never suspect them, but she knew that they were strong Nazis. She ought to know—her father won all the old trophies in the old *Schuetzenverein* when he was alive. Since listening to her I've been wondering what makes a person a fifth columnist. Do you know?"

"Before answering that one, let me dispose of your friend Hilda," I said hotly. "Next time you see her tell her for me to keep her suspicions to herself unless she has some pretty definite proof. And then tell her to turn it over to the G-men. In the last war many innocent people suffered because of the overheated imaginations of a lot of busy-bodies who constituted themselves amateur protectors of the public. In the present emergency we don't want a lot of witch-hunting by a group of self-appointed zealots. The regularly established agencies, with the right kind of cooperation, are best able to handle any cases that develop. I don't mean by that if you or Hilda or any one else, for that matter, have your suspicions aroused you shouldn't pass the information along to the right people. But don't do any broadcasting."

"Stop preaching," Electra interrupted. "You needn't get mad about it. I only told you what she said. And besides you haven't answered my question."

"What makes a fifth columnist, wasn't it?" I mused. "I've thought about that too. Here are a lot of people, most of them born Americans, educated in our free schools, enjoying liberties not equalled anywhere else on earth, and certainly living better than they would in the homelands of their foreign-born parents or grandparents. Yet they go along blithely making stooges of themselves for alien rulers, hostile to every institution and philosophy that are truly American. They're blind fanatics for a cause."

"They ought to be loaded on boats and sent back to their adopted fatherlands," Electra cut in with conviction.

"Maybe so," I countered, "but that wouldn't get at the underlying cause of the trouble. One of the weaknesses of our democracy is that for a couple of generations now we have been so obsessed over our personal rights and privileges, that we have more or less repudiated our leadership. We've lost respect for a lot of the things our forefathers fought for. Respect for leadership is one of them. We've developed a cynicism of the idea that there is anything noble about personal sacrifice, and grown contemptuous of the thought that we instinctively ought to assume the obligations that go with the many privileges that we enjoy. We've learned to resent discipline of any kind. It's the popular thing to deride loyalty to any institutions or principles other than personal selfishness or self-advancement.

"In the last few years we've seen politicians win elections by deriding and distorting the deficiencies of business leadership. And we've seen business fight back by making capital of the scandals of political leadership. A lot of our so-called educators have made a fetish of reviling any kind of leadership. The net result has been that we have all but destroyed respect for leadership in any walk of life—political, religious, educational, industrial.

"I was reading the other day that we have become a cult of mediocrity worshipers, simply because we must have something to look up to. The average person can name you more Hollywood idols—male and female—than he can United States Senators. More people know more about the day-to-day batting average of Joe DiMaggio than they do about the activities of our cabinet officers. We've got to have pleasures and thrills, and those who provide either or both are the ones who occupy the popular pedestals. Add to them the mediocrities of pulpit, pen and political platform, this writer said, and you have a bunch of masters of the art of dressing up half-truths and nonsense so seductively as to win the following of millions. Our people have been taught to distrust any kind of leadership that doesn't make the primrose path of pleasure just a little brighter, or the featherbed of soft living just a little more comfortable."

"A little bitter aren't you?" Electra asked.

"And why not?" I replied. "After all this country is facing one of its gravest crises and it pays to be realistic. It may be yours and my lives that are at stake. To meet successfully the emergency that confronts America today is going to require more discipline, more sacrifices and more loyalty from our people than at any time since the Civil War. This business of matching armaments with the minions of force isn't going to be child's play. And if Hitler dictates a European peace, the battle won't be with armaments alone. To meet the challenge we are going to have to accept and dedicate ourselves to a type of leadership that this country hasn't had for years. And we've got to like it, and back it, and respect it, and be loyal to it, and make sacrifices for it. We've got to forget a lot of self-indulgences and forego a lot of personal privileges. If we don't . . ."

"Don't forget the London broadcast," Electra interrupted.

The tones of Big Ben in the Tower of London were just dying out as I tuned in on the 956-kilocycle waveband. Perhaps I imagined that the voice of the announcer seemed just a little distraught as he said:

"London calling. This is the Overseas Service of the British Broadcasting Corporation. Last night and early this morning the British Isles were subjected to the worst bombing of the war. Wave after wave of enemy planes swept over Scotland, the Midlands, and the Southeast, even as far as Wales. Our anti-aircraft guns kept up a continuous fire and the R.A.F. performed ably. No reports of casualties are available as yet although the official communique says . . ."

Isn't it possible that many electrical contractors are suffering from the same timidity that prevented Tom from asking Mary to be his bride? Contractors continue to take minimum wiring jobs when, in many cases, they could sell adequate jobs, if they'd just ask their customers to consider better wiring. These customers may not even know the advantages of adequate wiring.

AN AID TO BOLDNESS

General Electric makes it easy for contractors doing home wiring to be bold by providing a wiring plan, G-E Home Wiring, that is easy to explain. It will catch the customers' imagination and will provide complete wiring. G-E Home Wiring specifies large enough wire sizes, plenty of outlets and an efficient wiring plan.

ANOTHER AID TO BOLDNESS

Moreover, the use of G-E Wiring Materials will help all contractors to be bold. Your customers know that the name, General Electric, stands for quality and dependability. Your use of these materials will help build prestige and confidence. The G-E line of conduit, wiring devices, and wire and cable is complete. You will find exactly the materials you need for any job.

For further information about G-E Wiring Materials or G-E Home Wiring, see the nearest G-E Merchandise Distributor or write to Section CDW-0237, Appliance and Merchandise Department, General Electric Company, Bridgeport, Connecticut.

GENERAL ELECTRIC

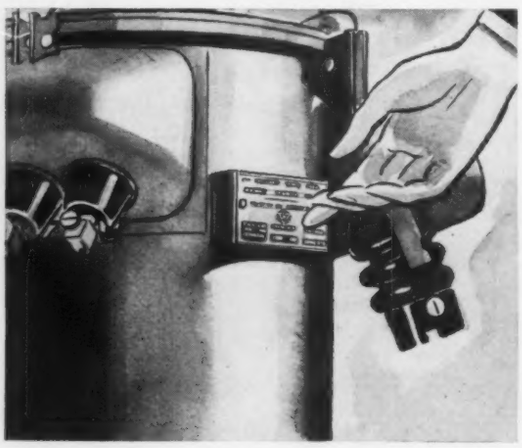
PRINT IN BINDING

The Case of the Drooling Transformer

1 **How to keep oil** inside transformers and moisture outside was beginning to get us down. Our distribution department investigated siphoning, leakage, and half a dozen other clues . . . and still we were stumped by drooling tubs.

2 **It was a Line Material** sales engineer who got us to thinking maybe he had the answer. "L-M stud type bushings stop the siphoning," he said, "and L-M tanks are really sealed moisture tight." Then he proved it.

3 **First, he showed us** the under side of t L-M Transformer cover. The gasket that L-M cover is confined in a doub ridged channel seat, held permanently place by double walls.



4 **Next, he pointed out** the gaskets around the individual L-M primary and secondary bushings. You never saw a snugger fit anywhere, not even in a Miss America contest.

5 **How the L-M people** even guard against name plate rivet holes as a potential cause of oil loss was the next thing he showed us. The L-M name plate is *not riveted* directly to the tank. It is riveted on a base which is *welded* to the tank.

6 **The pay-off came** when I visited the ne Transformer plant and saw the L-M " down leakage test". Rows of new, oil-filled formers suspended upside down, with the side pressing against the most vulnerable age spots . . . the floor below clean as a w

The initial oil level inside L-M Transformers is always at least two inches above the terminal block. This high initial oil level, plus the careful L-M protection against oil loss, assures lasting submersion of the terminal studs. The result is full use of the oil's *insulating* as well as its cooling properties, and the elimination of terminal flash-overs. Plenty of oil in an oil-tight tank . . . here is unquestionably another important factor in the remarkably trouble-free service record L-M Transformers have maintained.

LINE MATERIAL CO.

Human Problems of the Industry

By P. M. Downing

BUSINESS as the human institution and its contribution to human welfare seems to be an essentially modern view. Until recent years, business was considered almost entirely in terms of prices and profits, market influences and fluctuations; rarely in terms of the people who pay the prices and provide the profits and who, being themselves the market, are themselves most affected by influences and fluctuations.

But today the human aspects of business are being recognized as never before. The public, having apparently become aware of its importance to business, is assuming a more demanding and exacting attitude. Business itself has become aware of its dependence upon public good will as well as upon public patronage. This attitude is reflected in the general acceptance of public relations as an increasingly important activity of business of almost every character.

It is not claiming too much to say that in their recognition of the importance of the human factor in their operations, the public utilities have been far in advance of other lines of business. But we have not yet found the solution of all of our public relations problems. The genius with a cure-all formula has not yet appeared and probably never will appear. We have learned much, however, and perhaps the most effective lesson we have learned is that the solution of these problems lies largely in our recognition of the human factors of our business and the manner in which we deal with those factors.

Our business stands out as a symbol of effective organization, finely balanced upon a tripod, the three legs of which represent finance, labor and market. Expressed in human terms, these three legs are stockholders or owners of the business, employees and customers. The tripod will hold the structure in perfect balance only so long as each of these groups functions properly and each gives to the others the proper amount of support. Each group should be considered in terms of the people who comprise it and not in the economic abstractions of finance, labor and market.

They are all of equal importance in sustaining the structure in complete and efficient balance and here we encounter the most difficult of all of our problems. Our business is service to our customers, who far outnumber either of the other two groups. In our attempts to humanize our relations with them, we may sometimes lose sight of the fact that the other two groups also have human rights which must be given full consideration.

First leg—the owner

Obviously, there must be owners. Just as obviously, ownership means the investment of money, much of it the savings of thrifty persons of limited means who are dependent upon receiving a reasonable return upon the money they have put into the business. Time was, perhaps, when these investors would have been considered solely as a source of money, and with the sending of dividend checks, management felt that it had fulfilled its obligation to them. But today we consider them as people, each with his hopes, ambitions, aspirations and necessities, each thinking in a personal way of the money he has accumulated and of the business in return that induced him to make the investment originally. But we who are charged with management should give him additional accounting of our stewardship, so that he may understand that there is a human organization standing guard over his money, doing its level best, by the wisdom and skill of its administration, to j u s t i f y his own wisdom in making the investment.

We can show him how his money is employed. We can keep him informed on the affairs of his company, and this we are learning to do in a more interesting manner than has been done in the past. Annual reports to stockholders are generally drab appearing documents containing a mass of very prosaic statistical information.

The up-to-date report has been put through a face-lifting process. It has lost none of its dignity, but it seemingly has discarded the old Mother Hubbard for a gown by Patou. It frequently is printed in color and is illustrated. Its text is simply written and informative. It seeks to induce the investor actually to know his company, to recognize his partnership interest in it and to have toward it the same loyalty of ownership he would have toward any other property he might possess.

There is need, too, for development of popular understanding of the rights of the investor class. They are the almost forgotten men and women of today's disturbed economic world. The clamor of radical social philosophies, deprecation of private initiative and profit making, have led to a growing disregard of the fact that investors have rights which should be protected. Utility stockholders, like the shareholders in other businesses, have suffered from too frequent repetition of high-sounding phrases about "economic royalists" and the "predatory rich." Far from deserving opprobrious name calling, the investor class should be regarded as the backbone of utility growth. They have supplied the funds with which our systems have been built. They will supply funds for further development when existing bars against private capital investment are let down—as they must be eventually

Second leg—employees

The second leg of the tripod of human factors upon which the utility structure rests is the employee group. The time has passed when we can look upon labor as merely a commodity to be measured only in man-hours of work. Employees today must be treated with the consideration that every man as a human being demands for himself.

It is stating only the obvious to say that the root of good public relations is nourished in the fertile soil of good employee relations. Loyal employees who believe in their jobs and their company are the greatest force that can be mustered for the creating of public good will. They hold the power to build good repute or, by their attitude, cast public doubt upon the worthiness of their employer. In their contacts with customers and with the public generally they reflect inevitably the quality of the institution for which they work.

I wonder, sometimes, if we emphasize sufficiently that loyalty in an organization begins at the top—that it is generated primarily by the acts and attitudes of those in charge. It is something that cannot be demanded and obtained by the issuance of general orders. It springs from free acknowledgment of the mutuality of interests, from participation by the company in employee self-help movements, from development of the family feeling, and from inspiring in each employee, no matter how humble his task, the feeling that he individually is important to the business rather than an inconsequential cog in its machinery.

It is generally recognized in industry today that the foreman is the real key man in promoting and maintaining satisfactory employee relations. He is the industry's first sergeant. He comes into close contact with the workers. He knows them as individuals, and he knows many of their individual problems. If he is a good foreman he recognizes those problems as human problems, possibly trivial in the overall picture of the industry but of vital importance to the individual.

Grumblings and demonstrations of dissatisfaction by employee groups are not always inspired by the wage and hour scale. Far more often they are inspired by a foreman who lacks the human touch and who is more or less of a tyrant in his small field of authority. Many groups of potential trouble makers have been converted into loyal and contented workers merely by a change in foreman. Personnel management is charged with no greater responsibility than that of selecting the right man for the foreman's job.

In a recent publication of the National Industrial Conference Board there appeared an interesting analysis of "What It Takes to Be a Foreman." The article was a resume of the answers to a questionnaire submitted by nearly two thousand industrial foremen. Two points brought out by the answers are pertinent here. I quote:

"They (the foremen) want a chance to contribute their viewpoints and experience when company policy affecting employees is being formulated. They are the men, they argue, who are working every day with rank and file employees and should know, better than any one else, the point of view and method of reasoning of the average employee. Moreover, they are the men who must carry the policy into effect after it has been decided upon. As they see it, nothing can be lost and much may be gained by getting the foreman's ideas before definitely adopting a policy.

"They want to be given more information about the company, its objectives and its problems. Their men are much more curious about many matters than they used to be. They are asking questions, and if the foreman cannot answer reasonable questions in an intelligent way, both he and the company suffer in the eyes of the questioners. These foremen feel that management should take pains to keep them informed about business and company conditions and problems, and the underlying reasons for company policies that have been or are to be adopted when these policies affect their departments and their men. Also, they want more and better training themselves so that they can more fully measure up to what management expects of them."

These views are interesting in their bearing upon our discussion of the utility industry's h u m a n problems. They suggest how management, through the upbuilding of the morale of personnel, may improve the relationships of the entire organization within and without.

Third leg—the customer

We now come to the third leg of our industrial tripod—that great body of utility customers to whom we look for revenue in payment for the service we render. It is here those problems multiply at the most rapid rate—for in every branch of our service to customers, the human problem must be reckoned with. We must concern ourselves with the quality of service in all its ramifications. We cannot attach too much importance to the treatment of our customers when they enter our offices or when they communicate with us by letter and telephone.

We must accept complaints humbly and apologetically and make an earnest and sympathetic effort to solve customer problems to his satisfaction. We cannot assume that the customer is always right, but we can go a long way in that direction—perhaps farther than we have yet gone, and we can make friends by so doing.

But all good customer relations are not the fruit of courtesy alone. It is a common error to assume that customer relations are wholly the business of the sales or operating or commercial departments, when in fact the sources of irritation can be traced not infrequently to acts of management or a board of directors. A utility's policies regarding rates, service charges, service extensions, etc.—even though largely regulated by public authority—may be good or bad according to their qualities of justice, right and common sense.

The operation of an electric or gas system of great extent is a complex business to the layman. Frank statements in explanation of policies which involve the interests of customers will do much to prevent misapprehension and to allay uncalled for suspicion. A well informed customer is much less liable to find justification for dissatisfaction or opposition.

But it should not be taken for granted that the solution of the public relations problems of our industry lies in printers' ink. The wise use of advertising space can be helpful, as can publicity releases that have spot news value or that tell a worth while industry story. But here we are making use of words, and it is not by our words but by our deeds that we are judged. All the advertising and publicity in the world will not create public good will unless the acts behind what we say are worthy. All the printed claims we may make and all the glamour and glory we may seek to throw around our business with high-sounding adjectives, will not offset the poor opinion or ill will created by a letter writer who mistakes stiff formality for dignity, a discourteous counter clerk or a service crew that tramples down a customer's flower beds.

Electric utilities have passed the time when their major problems were financial and technical but are now face to face with the problems of preserving them as free enterprises according to American principles and traditions. Our immunity from attack by those who would socialize our industry depends not alone upon our defensive participation in political activities but more upon our winning such a high place in public esteem that the political seeds of distrust and dissatisfaction which may be strewn in our path will fall on barren ground.

Rural Electrification Award Won By PG and E

INDICATIVE of the degree of rural electrification progress in the Far West is the award of the Thomas W. Martin prize to the Pacific Gas and Electric Co. for showing the greatest contribution to the achievements of rural electrification. Announcement of the award was made at the recent Edison Electric Institute's convention.

Despite the fact that the company served one of the most intensively electrified rural areas in the world in 1939, the number of farms receiving electric service was increased by 2.45 per cent and the sales of rural electricity gained by 163,600,193 kwh. or 24.15 per cent. The degree of rural electrification on the company system is shown by the following statistics:

Number of farms within 1 mi. of lines	73,000
Number of farms served	69,372
Number of farm customers (including duplications)	105,945
On agricultural power schedules	35,469
On farm domestic schedules	70,476
Total kw.-hr. sales (1939)	840,962,820
Agricultural power	705,720,236
Farm domestic	135,242,584
Total rural electric revenue (1939)	$13,345,901
Agricultural power	$9,301,325
Farm domestic	4,044,576
Average rural electric rate (all classes)	1.587c
Agricultural power average	1.318c
Farm domestic	2.991c

Extent to which PG and E has pushed rural electrification during the past quarter century is indicated by these figures. Gains in 1939 were simply the result of keeping on the job. Degree of progress in increasing rural electrification in 1939 is shown by the following figures:

		%
Increased rural electric lines	784 mi.	2.9
Increased No. of electrified farms	1,657	2.5
Increased No. of farm domestic appliances	80,472	
Increased connected load from farm appliances	73,077 kw.	
Increased electric usage from farm appliances	9,483,821 kw. hr.	7.5
Decreased average rate from farm appliances	0.06c	2.
Increased revenue from farm appliances	$206,326	5.4
Increased No. agricultural installations	5,500	
Increased connected load from agricultural installations	34,635 hp.	6.5
Increased elec. range from agricultural installations	154,116,372 kw.-hr.	27.9
Decreased avg. rate from agricultural installations	0.10c	7.1
Increased revenue from agricultural installations	$1,480,323	18.9
Increased total rural kw.-hr. sales (over 1938)	163,600,193	24.15
Increased total rural electric revenue (over 1938)	$1,686,649	14.47

Among the achievements listed by the company as contributions to agricultural advancement during 1939 were low rates, liberal extension policy, farm advisory service, free pump testing and promotion of new uses, including dehydration, dairy sterilizing, soil heating, turkey brooding and insect control. The PG and E average rural rate of 1.6c per kw.-hr. compares to an average for the rest of the United States without PG and E of 3.1c per kw.-hr. Approximately 50 per cent of all the rural electricity used nationally is consumed on California electrified farms. The PG and E presentation points out that this alone is not the reason for the extremely low rates. The California Railroad Commission has long taken the position that farm rates should be inducive to increased usage. Quotes from the Commission's 1923 decision: Farm electrical service "does not and should not bear its ratable share of the cost."

Demonstrative of the PG and E liberal line extension policy is the fact that 784 miles of new line were built in 1939 despite the fact that on January 1 of that year, the company had 26,656 miles of rural line and the possibilities of extending them further were almost exhausted. Many new extensions only 4 and 5 miles in length were made. However, one new 130-mile line was built with an average of only two customers per mile. Less than half of the 1939 extensions were built on a modified standard of construction, each approved individually by the California Railroad Commission.

Farm advisory service is provided by a staff of 30 farm power advisers who have had an average of 15 years' experience with the company. These men made 45,201 calls on farmers in a single year during which they inventoried present equipment and advised regarding new equipment, proper rates, wiring and other farm electric problems. Each adviser is required to make 10 survey calls per week and the information thus secured is compiled on cards which are filed and serve as a perpetual inventory of equipment farm customers have and do not have. A number of these farm power advisers are practical farmers; some of them operate farms and use them as experimental laboratories for ideas to increase the profitable use of electricity on the farm.

The presentation on which the Martin award was based emphasized the fact that a sound organization and plan are necessary for conducting rural electric development. In the case of PG and E, personnel engaged in rural

Thomas W. Martin plaque above is now gracing the walls of PG and E offices in San Francisco

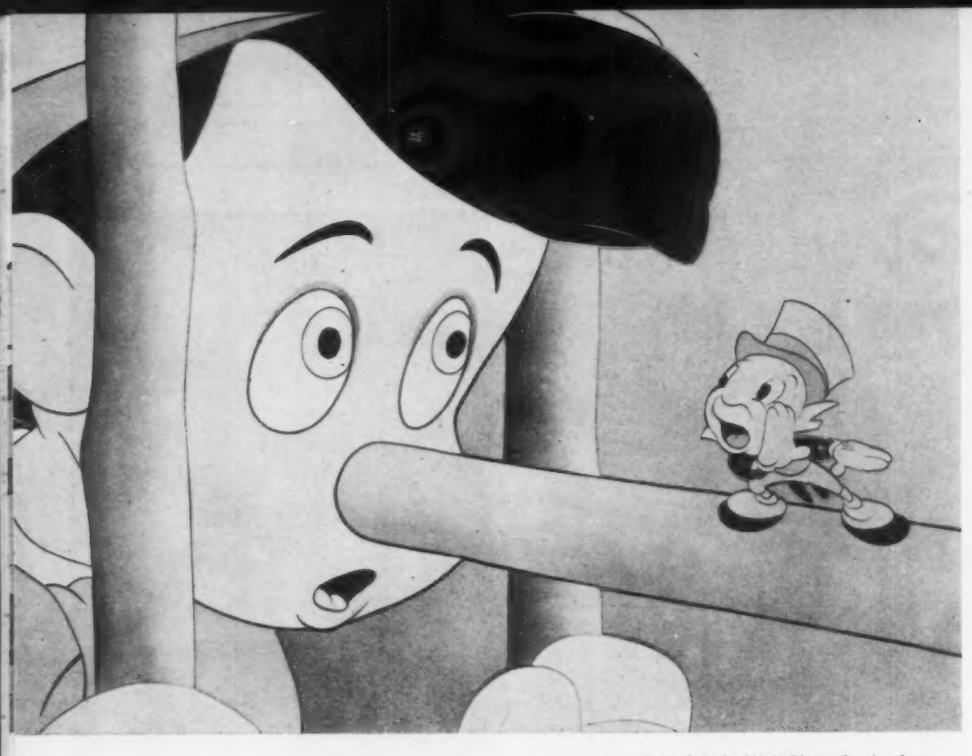
electric development includes 30 agricultural power sales-service representatives, six supervisors and engineers devoting a portion of their time to this work, 12 pump testers and 40 farm domestic appliance salesmen exclusive of extension solicitors, appliance counsellors and dealer sales promotion representatives. This personnel functions in accordance with a plan by which they develop prospects for equipment and appliances which are assigned to dealers for actual sales. This requires a maintenance of a complete and up-to-date card index of all dealers in the territory served as well as an analysis of the type and brand of equipment handled by each one. These cards also serve as a dealer mailing list. In addition to this specialized sales personnel, all company employees are encouraged to develop prospects for new uses.

The entire sales program is supported by an extensive advertising schedule in all principal media, including rural newspapers, farm journals, direct by mail, radio, truck banners, bill stickers, motion pictures, bill posters and exhibits at fairs and festivals. Twenty to sixty-column inches of advertising are run weekly in 151 rural newspapers. Frequent emphasis of farm application is made on the company's two-hour radio program every night. One or two advertisements per month devoted strictly to agricultural application are run in six farm journals with an aggregate circulation of 152,489.

The presentation on which the award was based was compiled under the direction of A. M. Frost, manager of agricultural power sales, under whose direction the entire rural electrification program functions.

Electrical West—Vol. 85, No. 1

"Pinocchio



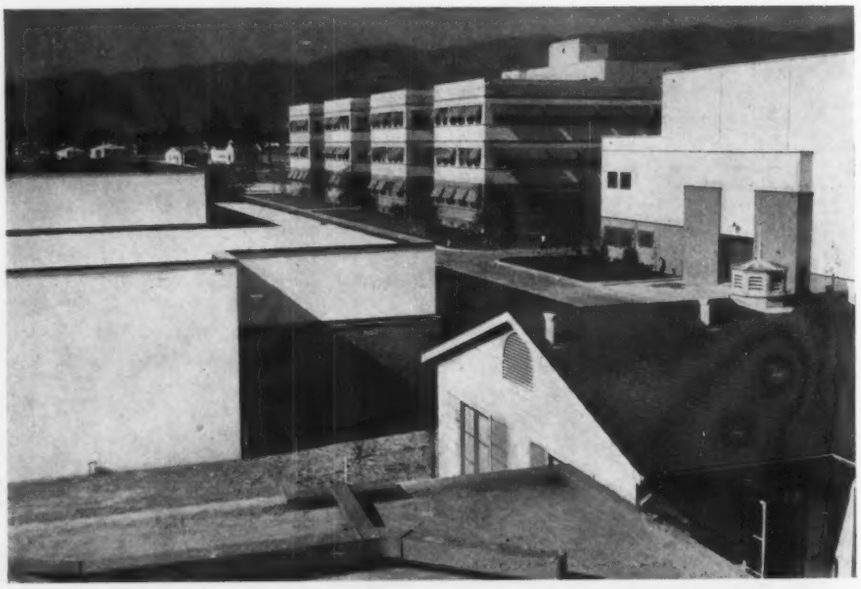
Because Electricity is breathes life into at the new Walt

Copyright by Walt Disney Productions

PINOCCHIO, under Walt Disney's enchantment, was a little wooden puppet without strings into which a Blue Fairy breathed life. But Pinocchio and all the other rather wonderful Disney characters are puppets drawn on sheets of transparent celluloid by some 900 creative artists—45,000 drawings to make an average 700-ft. short production. Chances are, the breath of life in them is electricity, employed in a comprehensive variety of applications and processes.

The new Walt Disney Productions studios, just completed near Burbank, Calif., are not alone the most completely and exactly air-conditioned motion picture studio city, but employ electricity in more ways and newer ones than most any other theatrical enterprise. A cartoon moving picture, in color and sound, is essentially a triumph of mechanics over nature, and throughout the involved process electricity "pulls the invisible strings" by which sound, dialog, drawings and color are blended and seemingly given life on the screen for the enjoyment of millions of humans.

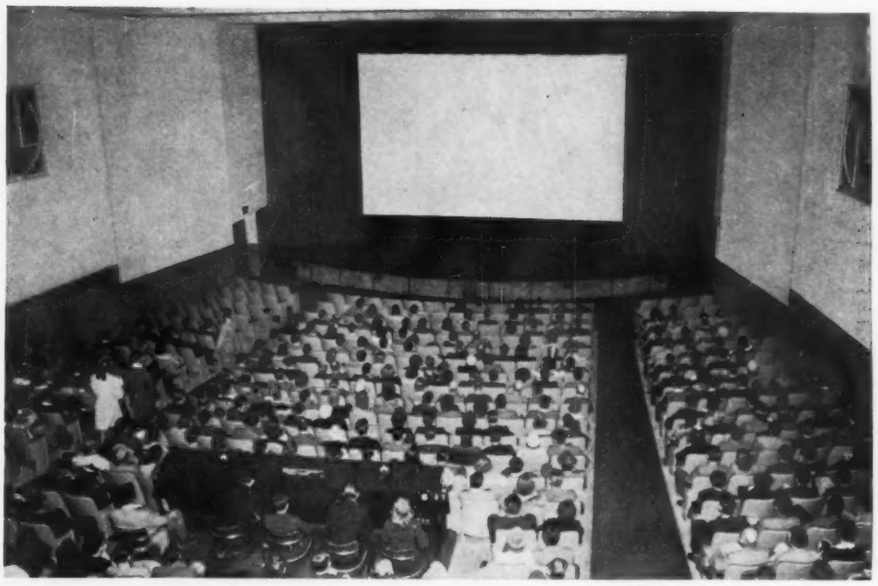
To understand better where electricity plays a part at the new Disney studios, a brief idea of preparation of such a movie is helpful. For a feature, such as Pinocchio, a full script is re-



Above, right, an avenue in the 51-acre Disney studio city at Burbank; four of the eight wings of the Animation building at the rear; also sound stage, and in foreground, the camera and cutting buildings. Below: Artists and writers have offices like this in the Animation building. At the floor, right, note the special baseboard, with channels for convenience outlet circuits, telephone and compressed air, and a louvered lower section through which air is exhausted from the room

...is Alive!"

the "Blue Fairy" that thousands of drawings Disney Studios



Theater for previewing, most interesting feature of which is the control desk at left, where mixing and synchronization of sound to film takes place. Music, sound effects, dialog and animation of pictures are all created separately, then mixed and blended and re-recorded. Control of that important blending is provided at this desk

quired, but for most short productions a brief plot and a series of colored sketches pinned in sequence on a huge board start the work. When approved by Disney, direction is assigned to director, musician, layout man, background artists and animators.

Animators cannot work, though, until background layouts are done, dialog, music and sound effects recorded. After the dialog track is electrically and photographically recorded, the cutting department prepares a chart which shows in terms of single frames of film, the length of each word, intervals between words, accents, inhalations, exhalations, sounds. The animators draw enough single drawings to match this pattern prescribed by the sound, each drawing a part of some action which, when run in sequence, will produce a smooth action.

The animator works on tracing paper over illuminated drawing boards so that the image of the previous drawing will show through and permit him to make just the slight change necessary in action for the succeeding drawing. A series of drawings is photographed and he runs the film over on his own projector to study the action he has drawn. When the drawings are approved, they go to the Inking and Painting department, where 200 girls trace the drawings onto celluloid sheets in ink, and other girls apply color to the reverse side so that the inked outlines show.

Finished celluloids go by underground, air-conditioned tunnel to the camera department where they are placed in sequence over their right backgrounds—separately drawn—and photographed in color.

Each separate drawing is adjusted in place and then photographed, removed and the following drawing slipped in its place. So well organized is this technique that approximately 15 ft. of film per hour can be photographed. It is in this department that the electrical facilities must be controlled to finest limits. Light intensity from about 70-kw. of lamps must be kept absolutely the same for each picture. Voltage change of over one-tenth volt would change the color temperature of the lamp. The sensitive color film would respond differently and the projected picture be jumpy.

Likewise it is here that the severest load on the air-conditioning system is made. Not only must the camera room be absolutely without dust or lint—(magnified on a theater screen a speck of dust would be as big as a snake and as welcome). But the heat must be removed too.

Air Conditioning

Claimed to be the first completely air conditioned studio city, the Disney lot furnished the General Electric Co. engineers with as complex a problem as yet had been put up to engineers to solve. There must be absolute dust-free cooling for the camera department, clean and comfortable air conditioning

An animator's desk, at left, illuminated from beneath ground glass by a fluorescent lamp, so that each drawing of a sequence may be seen through the tracing paper. At right, the large sound stage during construction. Air inlets are behind the ceiling and wall convolutions; exhausts under the platform risers

for the huge Animation building with its 300 individual rooms and the tastes and temperaments of 900 artists to satisfy, humid air conditioning for the film and celluloid storage vaults, soundless air conditioning for the big sound stage and the smaller dialog studio, comfort for the offices and the restaurant, and for the theater comfort too but under different conditions.

A central plant type system was selected by Disney Productions, utilizing a natural supply of well water of 67 deg., both to preheat or precool the air, supplemented by 600-hp. of G-E multiple condensing units for refrigeration and two 190-hp. boilers for heat. Only isolated buildings have independent air conditioning plants, the rest use the heated or cooled water from the single source. About 1,300 motor hp. is used in operation of the various blowers, water circulating and refrigeration machines.

In each building is a central plant for that building, designed to produce the right atmospheric conditions wanted there. No air is recirculated, fresh air being brought in constantly, treated, distributed, and then exhausted. The Animation building is so large that each of its eight wings has its own central plant. Each plant is fed the heated or cooled water from the main engine house.

An interesting feature is that the air, after being brought in from high above ground, is precooled, filtered, humidified or dehumidified as required, then half of it goes through hot coils in a hot plenum, half through refrigerated coils in a cold plenum. Air delivered to the rooms is blended from these two sources, at the temperature determined by the theromstat. In the Animation building there are 156 thermostat control stations.

Air is delivered into the room through a special lighting fixture and Volocitrol air distributing unit at the ceiling, and exhausted through the louvered base of a special baseboard. The baseboard. 6,000 ft. of it used, has two channels in the upper section for telephone and 110-volt convenience outlet wiring besides the air duct in the bottom section.

The thermostats are compensated so that no cooling is furnished up to 74 deg. out of doors, then gradually increased so that at 98 deg. outside the indoor temperaturs is 78. A 20 deg. differential between indoor and outdoor is the maximum.

In the camera rooms, kept scrupulously clean, floors waxed, operators wearing special lintless clothing, entrance to the room can only be made through a de-dusting chamber where loose lint or dust is blown off the clothing by high velocity air jets and drawn through a floor grating. This same air is used to cool the motor-generator sets supplying d.c. to the cameras and banks of lamps.

Lou Ledeen, job superintendent for G-E during the installation; William Garity, chief engineer for Walt Disney Productions; and Elliot Harrington, G-E air conditioning sales manager. In the background the wings of the Animation building during construction

Special conditions are met in the Orchestra Stage building too. In this a special accoustic shell backs the orchestra. The entire space above the shell is air tight and filled with conditioned air under slight pressure so that it enters the stage from slots behind convolutions in the shell. Exhausts are through grills located in the platform risers. Careful attention was paid to maintaining the lowest possible noise levels in designing both the orchestra stage and the dialog stages. Special blowers of low air velocity, accoustically treated ducts and sound traps maintain low noise levels, and accoustical treatment keeps outside noise from entering, even the roar of transport planes from nearby Burbank Union Air Terminal cannot penetrate.

General Electric had two of its top air-conditioning engineers on the job throughout the installation, Elliott Harrington, air conditioning sales manager, and Lou Ledeen, job superintendent. They worked closely with William Garity, chief engineer for Walt Disney productions. Electrical work was supervised by W. F. Watkins, chief electrical engineer for Disney, with Fred D. Elliott, assistant. Pacific Electric and Mechanical Co. was the electrical contracting firm.

Electrical Features

Quantity of water used at this plant furnished the electrical engineers, Watkins and Elliott, with a problem of another kind. Water, obtained from two wells 150 ft. apart, taps underground Los Angeles water system water, so must be metered as it is pumped and again as it is dumped back into the stream bed. The water tower holds

At left, Walt Disney and Harrington explain the special combination lighting fixtures and volocitrol air distribution unit—two steel discs which act both as reflector shield for light and baffle for air distribution. Unit is lamped with 200 or 300-watt lamp. At right, Disney inspects the air filter in the air-conditioning system

150,000 gal. of which 100,000 must be kept in reserve for fire protection, 50,000 being used for the air conditioning.

By a set-up of 14 relays automatic control was developed by the engineers to alternate the operation of the two 440-volt, 150-hp. submersible 3,000 gpm pumps. Normal operation is actuated by a hydrostatic control instrument operating through relays. The special control alternates the starting of the pumps to equalize draw and prevent unequal water table dropping. Top limit float switches provide additional safeguard.

Service is brought from the Burbank municipal system to a transformer vault near the center of distribution by means of two feeders, a preferred and an emergency, at 4350 volts, on a 4-wire system. The vault has a capacity of 3300 kva.; three 333 kva. transformers for air conditioning, three 100 kva. in a lighting bank and three 200 kva. for emergency. Transformers are connected delta-to-delta on the consumer's side. Normal load is 1200 kw. although 1700 kw. maximum demand has been made at one time.

Service to other buildings is carried in approximately 4000 ft. of 5,000-volt paper insulated cable. There are five vaults for transformers and switchgear for the groups of buildings.

Sound

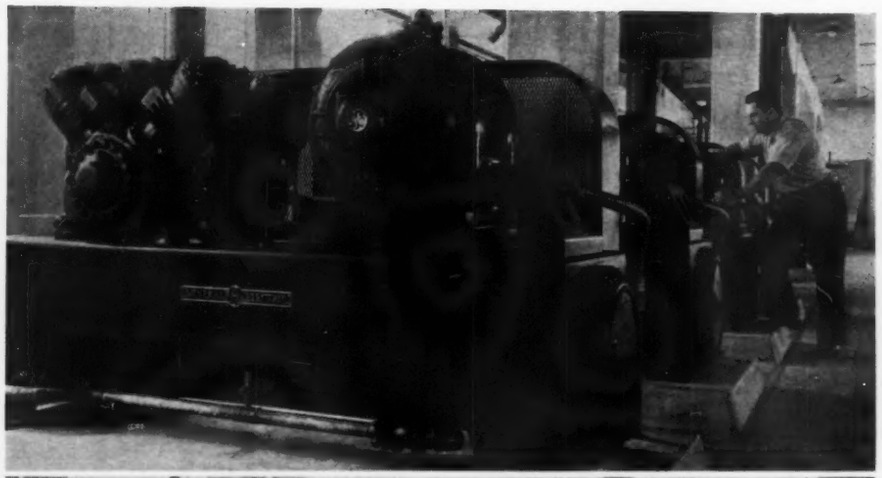
In an establishment like Disney's sound facilities are particularly vital and comprehensive. Supply circuits to sound equipment must have voltage regulation to close limits. Capacitor type reactors are placed ahead of the equipment on the a.c. side to prevent voltage increases or drops which would influence sound recording. Ratheon units, with input range from 95 to 130 volts, 50 or 60 cycle, and steady output of 115 volts, are used for this regulation.

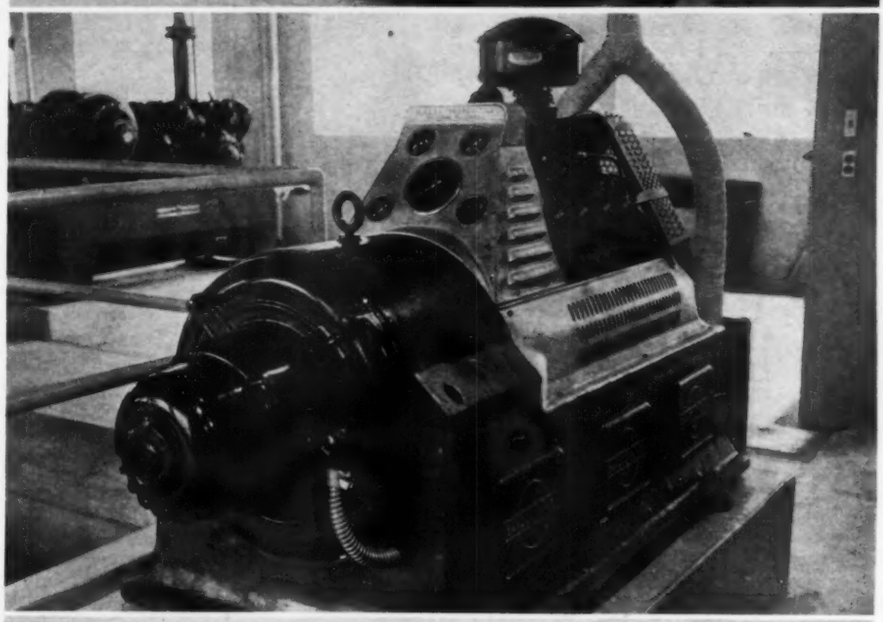
From the Dialog building, where recording equipment is centered, sound channels are run to practically all buildings on the lot, either for listening or for pickup to be recorded.

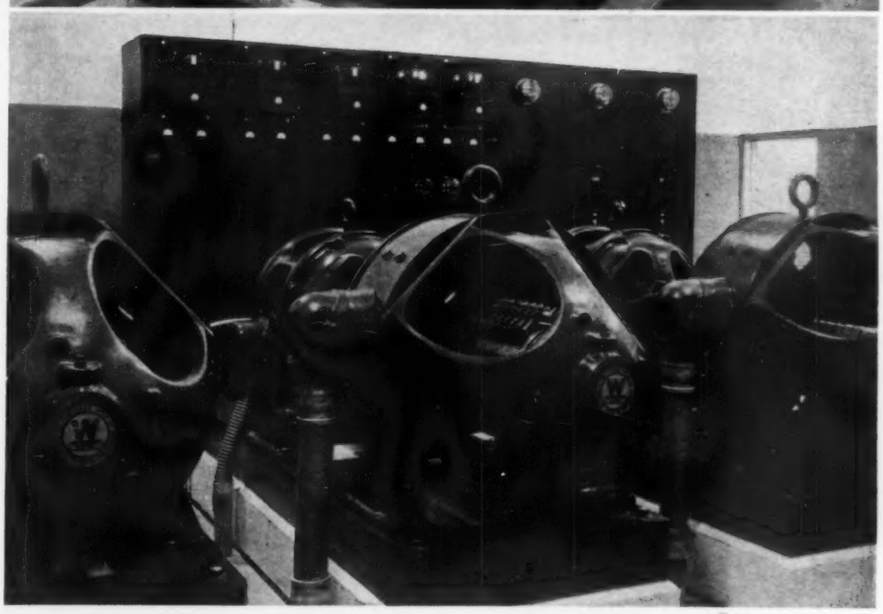
There are numerous little viewing rooms where tests of sound and drawings may be projected, each equipped with high grade theater projection equipment. But the Theater on the lot is most interesting for its concealed cove lighting.

In re-recording, one of the main tasks is to see that music, sound effects, and dialog are controlled, that music does not drown out dialog or necessary sound effects, that effects are not too loud, that music fades in or out at proper places.

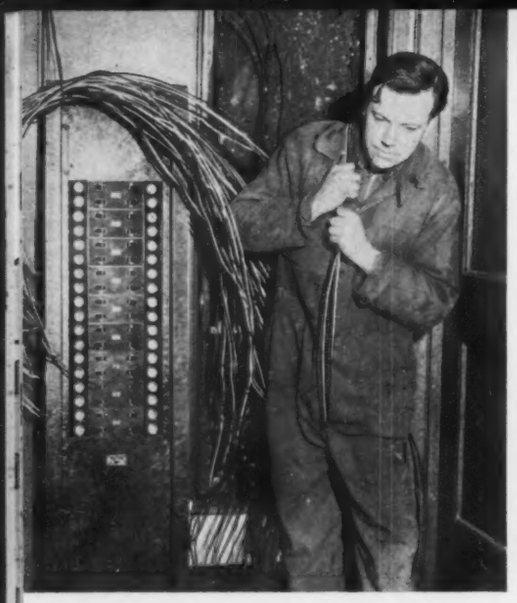
It is no wonder Pinocchio is given both life and speech. Every facility of an electrical age have been provided him by the new Disney studios.







A few of the 600-hp. of 50-hp. G-E compressors which refrigerate the water suplied to all buildings for individual air conditioning. Normal capacity is 600 tons, but 1,000 tons can be had if required. Center: Emergency standby of 25 kw. at 100 amp., is available from this 110/220-volt single-phase generator, direct connected to a Ford V-8 gas engine. Comes to full voltage in three seconds on power supply failure. Bottom: Each multiplane camera is supplied d. c. at 125 volts for high intensity lighting equipment from a 75-kw. Westinghouse generator



Thin Wall Wire to the Rescue

USE of the new thin wall wire paved the way recently for one of the finest commercial lighting jobs to be found on the Pacific Coast. An average of 45-ft. candle intensity has been provided in the 7,138 sq. ft. of space on the second floor of the No. 60 Sansome Street office building* in San Francisco. Thin wall wire was the determining factor in making possible this lighting installation. In fact, without it there would have been no relighting, for circuits were overloaded and cost of replacing conduit runs was considered prohibitive.

Circumstances surrounding the job and the fine all-around cooperation that made it possible are of interest. In brief the story is this:

The Pacific Coast Electrical Bureau sold the idea of wiring modernization; the Pacific Gas and Electric Co.'s lighting specialist, Nathan Graves, made the lighting layout; Buzzell Electric Works, electrical contractor, followed through by laying out and helping to sell an adequately wired job, and the Department of Electricity of San Francisco cooperated by permitting the use of thin wall wire.

The Bureau's engineer, W. C. Heston, had discussed wiring modernization with the building superintendent during some six or eight months prior to the time the space was leased and had gone into the whole matter of wiring rehabilitation thoroughly. When it was learned that the space had been leased to an insurance broker, call-back developed the fact that refixturing using 300-watt lamps was planned without due consideration having been given to wiring, although the utility's lighting specialist did suggest providing wiring capacity for 500-watt outlets and called attention to the importance of proper lamp voltage.

Pictured on this page: Above—The electricians found the new thinwall wires easy to pull into the existing conduit. Greatly added capacity was possible at this new branch circuit panel. At right—Feeding four new wires into a conduit that held only two before. Note the absence of torn up plaster from installing new conduit. This saving in expense alone made the difference between rewiring and not at all. Below—A floor similar to that now relighted, showing the "before" appearance. Ten foot-candles of light from 150-watt lamps in enclosing globes, using 2.4 watts per sq. ft.

Existing Circuits

Existing circuits consisted of two No. 12 wires in ½-in. conduit with four lighting outlets and a varying number of convenience outlets on each circuit. Of course it was necessary to separate the lighting and the baseboard outlets. The only solution seemed to be to get special permission for a greater conduit fill and pull out the old two No. 12's, repull with two No. 14's for the lighting circuits and pull in two new No. 12's for the convenience outlets. It was impossible to install new raceways since the ½-in. conduit was buried in a concrete ceiling slab.

This wiring arrangement would have provided 15-amp. lighting circuits for the four 300-watt lamps per bay as recommended by the lighting man, but the drop in voltage on the long No. 14 runs would have been excessive and the lighting job would have fallen down badly from an efficiency standpoint. After going into the matter of wiring adequacy at great length, the Bureau's engineer convinced the building owner's representatives that it was decidedly in their interest to have the job refigured on the basis of full adequacy, making use of the new thin wall wire.

The result was that the electrical contractor was asked to refigure the job; Chief Ralph Wiley of the San Francisco Department of Electricity cooperated in permitting the use of thin wall wire and the job went in, using 15,000 ft. of thin wall wire. With the smaller diameter wire it was possible

* Owned by Continental Insurance Co., and Fidelity-Phoenix Fire Insurance Co. John F. Moore, superintendent.

The relighted floor, where foot-candle intensity runs from 40 to 45, where wattage per square foot is 5. This was rewired with the thin wall wire. Kurt Versan fixtures were installed, lamped at 300 watts, but capable of taking up to 750 watts, silver bowl lamps. Private offices have 1000-watt fixtures lamped at 750 watts

to install two No. 12 and two No. 10 wires in the ½-in. conduit, the No. 10 wire being used on the lighting circuits. Thus, thin wall wire made possible No. 10 wire instead of No. 14 wire on the lighting circuits. This difference in wire size increased the lumen output of lamps by just 10 per cent—a very important increase in efficiency when projected over a period of years.

For those interested in the job from an illumination standpoint, the following data are given:

Area lighted	7,138 sq. ft.
Total wattage	28,950 kw.
Watts utilized per sq. ft. (total area)	4.05
Watts utilized per sq. ft. (working area)	5
Foot-candles per watt, initial, (working area)	9
Average foot-candles	45
Minimum foot-candles	40
Maximum foot-candles	50
Ceiling height	11 ft., 9 in.
Ceiling color, white with tinge of blue	
Wall color, pale green	
Venetian blinds, white metal	
Type of luminaire, luminous indirect using 300-watt silver bowl lamps	
Spacing of units	8.3 ft. x 8.5 ft.
Mounting height	9 ft., 3 in.
Lighting and wiring cost per square foot	$0.36

Of significance to the industry as a whole are the following percentage figures given by the electrical contractors, Buzzell Electric Works, as to the comparative quantities of materials and labor going into this job. The total job, including a little extra work in other than this relighting job alone, ran close to $3,500. The allocation of that total was in the following percentages:

	% of Materials Cost	% of Job Cost
Wire	19.4	13.9
Conduit	1.3	0.9
Panel Board	4.5	3.3
Fixtures	62.7	45.6
Lamps	7.2	5.3
Miscellaneous	4.9	3.5
TOTAL MATERIALS	100.0	72.5
TOTAL LABOR	37.8	27.5
TOTAL JOB		100.0

Thin wall wire, then, made possible an installation that could not otherwise have been undertaken, provided a service to a customer that wanted better lighting but otherwise could not economically justify it, provided labor with work, suppliers with sales of materials, and the industry with a lighting installation which is taken as a standard of illumination at its best.

Fluorescent Quorum

New equipment studied in Los Angeles in all-day session

Developments in new fluorescent lighting equipment and study of market potential and sales technique featured the program of an all-day meeting sponsored by the General Electric Lamp Dept. and held in the Edison Bldg. auditorium in Los Angeles June 14. Characterized as the most successful session of its kind ever held in that region, the two-part meeting drew an attendance of 250 architects, contractors, utility men, fixture manufacturers and building owners and managers in the morning when new equipment was demonstrated and new practices outlined, and 210 contractors and lighting sales people in the afternoon when markets and sales technique were presented.

Policies of the manufacturers, the EEI, the Fluer-O-Lier Assn. and the utilities were outlined. Emphasis was placed upon the necessity for selling lighting intensities rather than wattage. The questions of auxiliaries and power factor correction were discussed. New equipment, including the latest types of fixtures was demonstrated.

W. H. Robinson, Jr., of the G-E Lamp Dept., ran the meeting. The corps of experts who made the presentation included Alston Rodgers, F. M. Falge and L. H. Hruby of the Lamp Dept. and R. E. Bear of the apparatus department of G-E. Utility lighting department executives who took part in the discussions included G. M. Rankin, Southern California Edison Co.; T. H. Shepherd, Bureau of Power & Light; A. I. Benedict, San Diego Consolidated Gas & Electric Co. and Gordon F. Black, Nevada-California Electric Corp.

L. H. Hruby and Alston Rodgers of the G-E Lamp Dept. show some of the newest developments in fluorescent lighting at the recent southern California fluorescent conference held in Los Angeles

Sales Assistance for Retail Dealers

Puget Sound Power & Light Co. inaugurates dealer-sales cooperation program and builds new business

By Henry R. Kruse*

ON Feb. 1, 1940, Puget Sound Power & Light Co. inaugurated an expanded dealer-sales cooperative activity for the purpose of furnishing greater sales assistance to retail electrical dealers. Inasmuch as this activity is closely related to the entire sales program, it is desirable to outline briefly the company's sales operation and territory served.

The company serves 197,000 customers, of which 173,000 are domestic. Of this latter number 31,000 are farm customers. Total sales of major three appliances for 1939 were 18,675. The average use of current per residential customer was 1,419 kilowatt hours for the last 12 months. There are approximately 500 electrical dealers in the territory served.

In 1931 the company discontinued the direct sale of all electrical appliances, except ranges, water heaters, refrigerators and lamp bulbs. Inasmuch as the dealers had demonstrated their ability to do a satisfactory job on refrigerators, sales emphasis on this item was greatly reduced and more aggressive assistance to dealers in the sale of electrical equipment was undertaken. This situation existed until the new program was begun this year.

The company maintains a home service section of 17 representatives, who, through the promotion of better home lighting, were responsible for sales of domestic lighting equipment through dealers of over $45,000 in 1939.

The Commercial & Industrial Sales Section of 13 representatives promoted, through dealers, the sale of lighting, cooking, power and heating equipment in excess of $350,000 retail volume in 1939.

The Farm Electrification Section of 11 representatives accounted for retail sales of wiring and equipment of over $325,000 through dealer outlets last year.

Total sales volume of these activities, all made through dealer outlets, was in excess of $720,000.

In 1939 it became apparent that customer acceptance for electric ranges had increased sufficiently that dealers could profitably promote this item aggressively. The company did not wish to be in aggressive competition with dealers to see which one could make a sale and add load to the lines. Therefore, in line with the company's policy of turning appliance sales over to dealers when customer acceptance and saturation warrant, the following changes were made in its own merchandising program on Feb. 1 of this year:

1. The number of outside merchandise salesmen was reduced from 30 to 22.

2. The merchandise sales compensation was changed so as to place the entire sales emphasis on water heaters.

3. The following company merchandise objectives were outlined:

a. Company will continue aggressively to sell water heaters, believing that by this means customer acceptance and saturation may be increased faster during the pioneering period of this appliance.

b. Company will continue to stock and sell electric ranges and refrigerators but has removed the emphasis on the sale of these items.

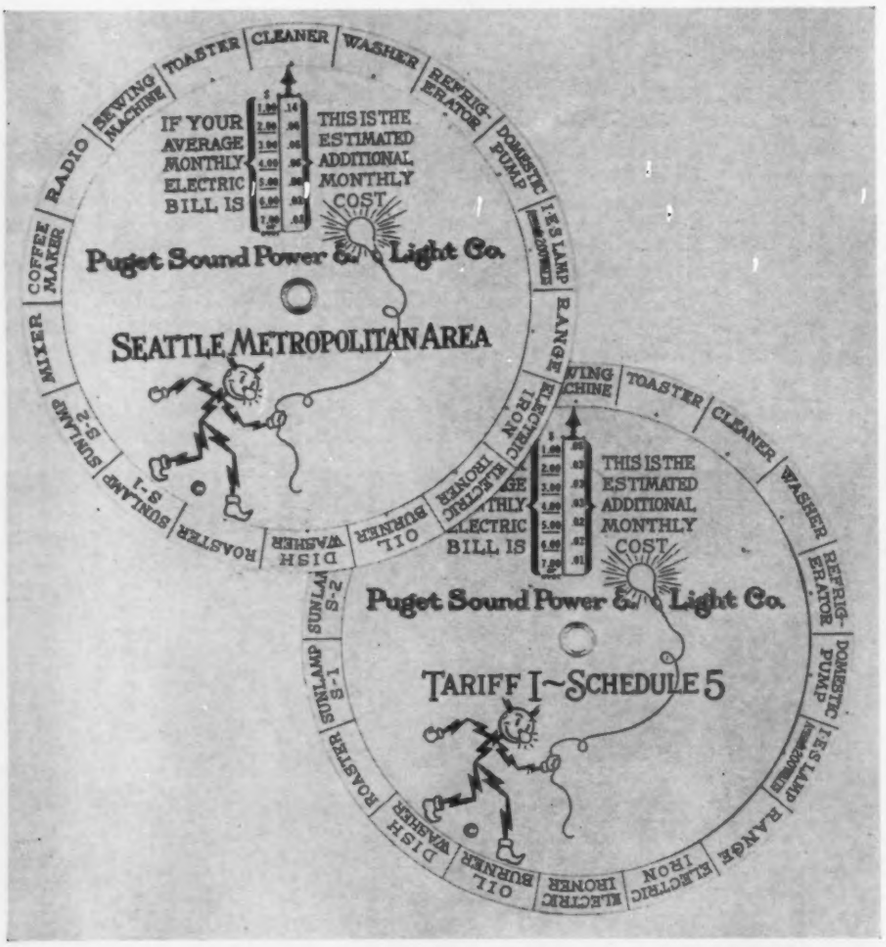
c. List prices will be maintained except on introductory or pioneering items, obsolete or discontinued merchandise, and group sales wherever, due to fuel competition, it is necessary.

d. Trade-in allowances will be maintained at reasonable amounts based upon the true value of appliance being turned in.

e. Merchandise sales terms will coincide with established good business practices.

The management of the company believed that there was a need for additional active sales assistance to dealers if maximum sales volume was to be se-

Slide rules on both major and small appliances are distributed to dealers by Puget Sound Power



Merchandise Sales & Promotion Director Puget Sound Power & Light Co., Seattle

cured. A dealer-cooperative program was outlined emphasizing direct sales assistance to dealers, as follows:

1. Provide sales training for dealer salesmen.
2. Provide cooperative assistance to dealers with their electrical merchandising problems.
3. Sponsor electric appliance sales campaigns.
4. Stimulate, by contact and instruction, interest in the sale of electrical equipment.

In order to carry out the program, 12 dealer sales representatives were selected from the existing sales organization. In selecting these men the following qualifications were required:

1. Successful field sales experience.
2. Capable of self supervision.
3. Capable of conducting effective meetings.
4. Able to gain confidence of dealer.

February and March were devoted to instruction and acquainting the dealer representatives with the program. The following outline of objectives and duties was set up:

Dealer Assistance—

1. *Range Campaign Promotion, April 1*—A three months activity providing for window display competition, direct mail, company sponsored range newspaper ads, Modern Kitchen Bureau display material and direct mail.

2. *Sales Training*—Each representative was required to review all possible information on range selling so that he would be in a position to render effective assistance. This plan will be followed on other items as they are undertaken. Complete familiarity with all electrical appliances is the ultimate aim.

3. *Data on Cost of Operation*—This information is being given to all concerned by the "Cost of Operation" calculator and by personal contact.

4. *Company Service Policy* — See that dealers and their salesmen understand necessary details of company's rates and service.

5. *Advertising* — Encourage dealers to tie in with company cooperative ads.

6. *EH & FA*—Promote use of Electric Home & Farm Authority financing plan wherever practical.

7. *Monthly Dealer Reports*—Secure monthly report of dealer's appliance sales.

8. *National Electric Sales Program* —Encourage cooperation with national sales programs as a means of securing more sales and greater profits.

9. *1940 Sales Programs*—In addition to the range campaign it is proposed to sponsor roaster, laundry, lighting and Christmas appliance activities.

In order to increase effectiveness of the program, dealer representatives have been assigned other duties in addition to direct dealer assistance, which may be listed under the heading.

Company Assistance—

1. Dealer sales representatives will be responsible for company store window displays.

2. Dissemination of sales information to local managers and cashiers will be the responsibility of this section.

The success of such a program depends to a large extent upon having a detailed plan of constructive and desirable things to be done. Contacts with dealers must be made only when there is a definite objective in mind. Visitations without a definite purpose are discouraged. Such calls result only in wasted time and effort on the part of all concerned. In supervising this work particular attention is given to having at all times a definite outline of things to be done and this schedule is constantly changed as the program proceeds.

In the final analysis, the objective of the program is to add load to the company's lines in the most effective and economical manner. Although the activity is new there is already evidence of its effectiveness, as outlined following:

Sales by dealers of ranges connected to company lines increased 77% for the first quarter of 1940 as compared with a similar period in 1939.

Widespread interest in sales training assistance by the company's representatives is increasing; 39 sales training classes were conducted in April 1940.

Effective use of direct mail and window display range material.

Repeated requests for additional cost of operation information as presented to all electrical dealers through preparation of a simple calculator.

Extensive cooperation by dealers with company sponsored advertising.

Gradually increasing volume of dealer requests on dealer sales representatives.

Almost universal interest and participation in the electric range window display contest.

The above are only indications of the ultimate success of the program. The excellent response and cooperation already received from dealers indicate the need of such an activity and that it can be profitable to dealers and company alike.

Typical advertisements are these ads below run in conjunction with various dealer campaigns

RENO, "Biggest Little City in the World," has one of the biggest appliance stores in the West in the new H. E. Saviers & Son establishment expanded over 35 years from a paint store to records, music, radio, appliances, air conditioning, and now to supplement these, a sheet metal and a wholesale electrical department. Air conditioned, light conditioned, it is modern even to a drive-in parking lot at the rear; and complete in that its building also houses the Nevada Credit Rating Bureau, and the CIT office for financing time sales. It is the Westinghouse and Philco store and distributorship in Nevada. Its opening, May 10-11, was a bigger public event than the premier of "Virginia City." Dad Saviers still runs the paint store, a handsome new one, and son Claude the electrical, with a staff of 35 in retail, wholesale and service.

BIGGEST Electrical Store in the Little City in the World

Claude Saviers, at left, who with his father, opened the new H. E. Saviers & Son, Inc., store and building, above, in Reno, after 33 years at the old paint store and later radio and appliance shop, shown in the upper left corner

Below, a sales meeting of the entire staff and neighboring dealers for which Saviers is distributor, just after the grand opening. Lower right, part of the continuous crowd which jammed the 15,000 sq. ft. showroom the two opening days, so dense that demonstrators could not demonstrate, salesmen found it impossible to open refrigerator doors except those high on platforms at the rear. At lower left, the counter of the newly opened wholesale department, and at the bottom, the air conditioning system, which with excellent lighting, rented the upstairs office space and reduced overhead

Stoppa Shopper

Electric Cookery Council conducts unique campaign

With a 35 per cent increase in electric range installations and a 117.8 per cent increase in water heater installations from April 15 to June 1, the Shopper Stopper campaign conducted in southern California under auspices of the Electric Cookery Council of southern California from April 15 to June 28 showed every prospect of complete success. The 124 residential salesmen of the Los Angeles Bureau of Power and Light, selling through the dealers, were active in mopping up all the prospects for a final record-breaking drive by the end of June.

The campaign was exceedingly well organized by the Dan B. Miner Co., advertising agency, and the Electric Cookery Council of which C. Arthur Sanford of the Bureau of Power and Light is president. Preliminary meetings were held first at the showrooms of Thermador Co., George Belsey Co., Westinghouse Co., Frigidaire Co., Graybar Electric Co. and the Cookery Council to show dealers how to "Stoppa Shopper, showa shopper, sella shopper." Clever stimulating bulletins were sent to the distributors to organize their dealers and to dealers to announce the campaign. The second bulletin urged them to put in range displays and the dealer representatives of the Bureau followed up to assist with the window display setup. Modern Kitchen Bureau material was used in ads and in window displays. Special tags were provided for ranges which the Bureau representative helped to place on the ranges on display.

These tags themselves had selling information on them. On the front was the notation "better baking with an oven you can be sure of—an electric range." On the back was space for the EHFA terms, the down payment, monthly payment with the water or electric bill, and a final slogan "Matchless in More Ways Than One."

Billboards appeared April 22 featuring the safety of electric ranges without flame, showing a baby at the controls of the range. April 29 to May 4 was a special window display week. Six suggested ways were told to show the use of the display material. A return postcard for entry into the contest was enclosed.

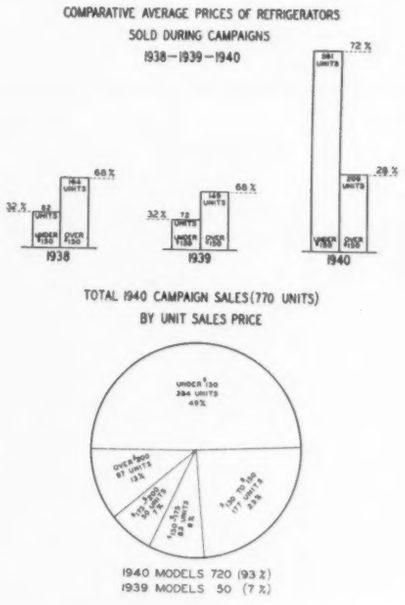
A special meeting was held April 15 to offer to salesmen a two-day outing, all expenses paid, (and a later announcement added that salesmen could earn enough extra credits to take along the wife) on a trip to Catalina. Basis for the Catalina trip was the attainment of 2,000 metres, a metre representing a dollar at retail selling price.

Cooperative distributors and manufacturers were the BMF Electric Water Heater, Frigidaire range and water heater, General Electric range and water heater, Gibson electric range, Hotpoint range and water heater, National Electric water heater, Speedex electric range, Stewart-Warner range, Thermador electric water heater and Woolwine electric range, Westinghouse range and water heater.

Refrigerators

Electric Appliance Society reports on recent drive

An increase of 70 per cent over the total San Francisco sales made during the Electric Appliance Society of Northern California refrigerator campaign in 1939 was reported in a recent campaign staged by the Society. Approximately 1,897 units were sold during the drive which was designed to stimulate and increase the average unit retail price.



Equal contributions by retailers and wholesale-jobbers enabled retail salesmen to earn $412 in additional bonuses for units sold during the campaign. In addition, $125 in sweepstakes prizes was contributed by the Society. First prize winner was Len Cross, The Emporium, San Franciso, who copped a $25 award.

Treasure Hunt

Edison holds another sales-building contest

Another successful electrical Treasure Hunt was held June 20-22 in Santa Ana, Calif., under the auspices of ten electrical dealers and the Southern California Edison Co. The sponsors report benefits in increased store traffic, a number of immediate sales, an excellent prospect list and an augmented realization on the part of customers of the excellent facilities which exist for the purchase of electrical appliances locally.

Approximately 1,800 Santa Ana residents saw interesting appliance displays at Treasure Hunt headquarters, left their registrations at dealers' stores and shared in the electrical prizes given away each day. The grand prize was a Westinghouse de luxe roaster, given by the Edison company.

Sponsors of the Treasure Hunt were Hill and Hill, Sears Roebuck and Co., Montgomery Ward and Co., Knox Hardware Co., Lash-Stewart Inc., Herbert H. Adams, Horton Furniture Co., Ira Chandler and Son, McFadden-Dale, Famous Department Store and the Edison company.

● THE COMMERCIAL ELECTRIC COOKING COUNCIL offers ten cash awards, totalling $250 for the best letters on "How My Customers Profit from the Use of Electric Counter Cooking Equipment" written by commercial electric cooking salesmen. Any dealer or utility salesman in the United States is eligible for the contest if he sells electric counter cooking equipment. First prize will be $100 in cash. Other cash awards will include a second prize of $50, a third prize of $25, a fourth prize of $15, and six other prizes of $10 each. Entries will be received between June 10th and August 31st, inclusive. Papers are limited to 1,500 words.

● ATTRACTIVE COLOR REPRINTS of articles in the women's magazines on lighting, electric cooking, appliances and adequate wiring have been used effectively as stimulators of sales in the San Joaquin Power Division, Pacific Gas and Electric Co. Obtaining reprints of these articles from the magazines, The Valley Electric Supply Co. makes them available to dealers in its "Through-the-dealer plan." Division offices are used as mailing points for these reprints with a letter under the district manager's name to range and other prospects. Salesmen make use of them as door-openers.

Future Campaigns

Western utilities carry on with summer sales drives

Sales managers are continuing to push their forces to the limit to make mid-summer quotas, and the results show that 1939 figures are being left far behind. Here's what a few companies have done and what they plan to do next month:

Brit. Columbia Elec. Railway Co., Ltd.—Canada-Pacific Exhibition—Aug. 26-Sept. 2, at which there will be company appliance and rural electrification displays.

Idaho Power Co.—Will continue to emphasize electric water heating and cooking through July, August. Company kitchen coach will also be active during those months in smaller rural areas.

Nevada-California Electric Corp. — July, range campaign.

Pacific Gas and Electric Co.—Electric range and water heaters and air-conditioning equipment was supported with a portion of the company's newspaper advertising program during June.

Pacific Power & Light Co.—Water heaters were featured in an electric kitchen campaign in June. 30th Anniversary of company was celebrated at open house shows.

Puget Sound Power & Light Co.—Company water heater program; dealer roaster campaign for July; company water heater campaign for August.

San Diego Bureau of Radio & Electrical Appliances — Refrigeration advertising for July.

Southern Colorado Power Co.—Range and water heater campaign was run during June.

Utah Power & Light Co. & subsidiaries, including the Western Colorado Power Co. Table cookery, refrigeration, milk cooling, air conditioning and commercial water heating campaigns for July. During August, these same campaigns plus stokers and commercial lighting.

Laundry Promotion

A laundry equipment campaign is now planned for northern California under the auspices of the Electric Appliance Society. Committees of dealers and distributors met last month at Society headquarters to plan details of the campaign and to set the date for the entire month of September.

The campaign will be a combination one with a general theme of completing the home laundry in which special emphasis will be given to ironers. Concentrated promotion will be carried on for two weeks, although the campaign lasts a month. It is likely that a special price concession on a discount basis will be made as an inducement on ironers.

R. G. CHAMBERLAIN (left) vice-president, Thor washers and ironers, hands George M. Dickie, manager, Thor Pacific Co., San Francisco, a silver platter for being first to lead a division in sales for three different months

APPLIANCE SALES REPORT, 1940

A Summary of Dealer and Utility Reports Compiled by Associations, Societies, Bureaus, or Dealer Contact Departments of Utilities

REPORTING COMPANIES	Idaho Power Co.[1]		Northwestern Elec. Co.[2]	Montana Power Co.[3]		P. G. & E. Co.[4]		Pacific Power & Light Co.		San Diego Cons G. & E. Corp.[5]		Southern Calif. Edison Co., Ltd.[6]		Utah Power & Lt. Co.[7]		Wash. Water Power Co.	
	1940	1939	Curr.	Curr.	4 Mos.	Curr.	Mo.	Curr.	3 Mos.	Curr.	4 Mos.	Curr.	4 Mos.	Curr.	4 Mos.	Curr.	Mos.
Ranges	1,701	1,466	618	333	471			266	684	46	152	175	558	111	545		
Water Heaters	627	658	224	56	86			169	409	34	138	46	181	145	584		
Air Heaters, aux.														235	959		
Air Heaters, 220														3	35		
Refrigerators	3,690	2,069	2,434	1,663	2,242			1,058	2,325	1,230	3,120	5,523	13,773				
Dishwashers	11	7												7	36		
Washers	2,427	2,093	970	1,150	2,018			748	2,308	428	1,542	2,454	8,896				
Ironers	135	186		123	234			62	165	66	236	342	1,219				
Vacuum Cleaners	837	707	870	622	1,139			177	593	252	964	930	3,452				
Radios	4,431	3,252	2,480	2,142	5,104			1,097	4,621	1,025	4,062	4,537	20,300	42	182		
Mixers	366	289								84	321	207	1,021	1,062	5,902		
Cookers, Casseroles	115	115								44	205	32	95	82	518		
Irons	2,882	2,189								426	1,673	809	3,548	7	60		
Waffle Irons	742	566								111	407	202	1,328	688	3,047		
Toasters	1,319	981								377	1,268	385	1,819	184	1,264		
Table Stoves	1,242	905	3,740	1,232	2,572					85	360	173	710	219	1,475		
Heating Pads	477	411										74	751	154	672		
Curling Irons										64	513	20	103	130	1,272		
Coffee Makers	1,301	973								468	1,418	238	1,012	49	400		
Sewing Machines										102	414			351	935		
Clocks	812	638								420	1,527	420	1,686	91	272		
Fans	128	116	307									201	241				
Floor Polishers																	
Sun Lamps	158	121										26	122	1,264	3,386		
Reflector Lamps														4	13		
Misc. Lamps														718	3,029		
Shavers												165	700	57	264		
Yard Lights														450	1,527		

SOURCES

[1] Figures compiled by Electric Equipment Sales Association. Include power company sales of all reporting dealers for 3 months.

[2] Lists appliances sold by dealers in Portland area. Figures compiled by Northwestern Electric Company.

[3] Combined dealer and company sales from report of Montana Power Co.

[4] Figures are being consolidated with San Joaquin Power and are not available this month.

[5] Gathered by Bureau of Radio and Electric Appliances of San Diego County. Estimated monthly sales figures used in this table: Miscellaneous figures include fans, curling irons and sun lamps.

[6] Includes reports from dealers on San Joaquin Valley system of company as well as Southern California areas served.

[7] Includes Utah Power & Light Company territory in Utah, Idaho and Wyoming. Also Western Colorado Power Company territory.

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ELECTRICAL WEST

SALES GUIDE

WOMEN ARE FUNNY THAT WAY

They'll buy a new hat or pair of shoes and want a whole new outfit to go with them. Surprising thing, but one alert electric dealer discovered they are the same about kitchens. And he sold 25 complete kitchens last year in a town of only 30,000. Nine out of ten prospects start from a range or refrigerator. When these are sold he discovers the kitchen in which they are to go. If it warrants he suggests that it is a shame to put the brand new range in an old kitchen—"Why not let me put in a complete electric kitchen for you?"

"No woman buys an isolated item," says Doc Allison. "She sees it as part of a sequence or ensemble. The kitchen fits in with this idea wonderfully.

"If she buys a new refrigerator the old range looks bad. If you do not sell her the range 'to go with it', somebody else will. First thing you know she has too many contracts. If times get hard and you sold her first, you are apt to be let ride a little longer. If you have sold her the works, you will have it on one contract and she'll pay whatever she pays to you. It is better for her, better for you and you won't worry about competition sending your merchandise back."

Kitchens are packaged, these days. As a dealer you can make money on unit cabinets as well as appliances.

ELECTRIC KITCHENS

JULY 1940

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OH, BY THE WAY—

If she hesitates ---

such thoughts as these may help YOU help HER decide for a kitchen

"Oh, by the way, Mrs. Prospect, why not make it an electric kitchen, while we are at it? No doubt you've considered it some. But have you thought about some of these angles?

Investment—

It would make the home more valuable by much more than the cost of modernizing the kitchen—

Make it more saleable should you want to sell it—

More rentable should you want to rent it—
Protect your investment in it over a much longer period of time.

Well Being

That's the investment angle. Now considering the matter of your own health and well being—

About 66% of your waking time is spent in the kitchen—it ought to be the most attractive room in the house—

The major source of health and fitness of your family comes from the kitchen — its food—

For the kitchen and its food the major part of the family budget is spent—and an electric kitchen can help you to save on that budget (The food preservation story of both the range and refrigerator can be told in this connection.)

The way foods are stored and cooked to preserve their vital energy and life-building minerals and vitamins depends so much on us-

SUGGESTED BY

ing modern equipment in the right way—in a modern kitchen.

Socially—

Socially, too, a kitchen today is important. The kitchen has become the entertainment room of the modern home, just as it used to be in the old pioneer days.

You'll want it attractive enough to invite all your friends to enter and admire.

It promotes pride in the home among the youngsters and a desire to entertain their friends at home instead of chasing out.

From a cost standpoint—

With the complete kitchen the purchase can be made at one time and the use and savings and benefits possible with each of the appliances can be had all at once .

The payments can be handled more conveniently in one contract over a longer period of time.

Compared to the cost of a new car, which is about the cost of a new kitchen, what a difference in depreciation! The new kitchen immediately increases the value of the home. With a new car the minute you drive it out of the showroom it depreciates 25 per cent. When you drive it into your home garage, you drive in a "used car."

●

Sell the Dishwasher First—

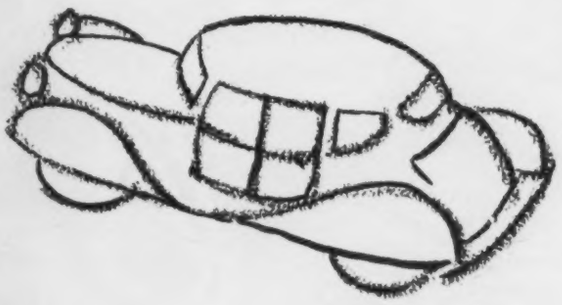
A dealer who has sold kitchens with remarkable success gives this tip— -

Sell the dishwasher first. Sell it hard. Chances are the prospect does not know she wants it, may even be opposed to it, prejudiced, or afraid of it. Since that is the hardest obstacle to surmount, go after it first and the rest will come easy, he has found.

In his experience, the appeal of saving the hands from dishwater, has the strongest appeal. That and the freedom it gives to be with guests or family immediately after a meal.

Next comes the health appeal of sterile dishes, elimination of dishrags and towels, preventing the spread of colds, etc.*

[Other Sales Guides you can use in selling the electric kitchen are those of the Electric range, Mar. 1940; water heater, February 1940; refrigerators, April 1940; and *Dishwashers, May 1940. Brush up on the sales points suggested in them for a more effective sales presentation, more results.]



YOUR SALES ALLIES

PUGET SOUND POWER & LIGHT CO. . WASHINGTON WATER POWER CO. . PORTLAND GENERAL ELECTRIC CO. CALIFORNIA OREGON POWER CO. . UTAH POWER & LIGHT CO. . IDAHO POWER CO. . THE MONTANA POWER CO. ROCKY MOUNTAIN ELECTRICAL LEAGUE

HERE'S AN IDEA

Maybe you've used it--

or maybe you could--

What? You have no space for installing a display kitchen? Space is too valuable to tie up? Maybe so, but it doesn't take any more space to display a range, refrigerator and water heater together than separately. Cabinets are now a packaged item that you can sell and make a profit on. Put them all together into a compact display kitchen and you have a "visualizer" from which to sell the complete kitchen.

Rows of ranges or refrigerators are typical display, but don't they look like soldiers lined up for parade instead of something that would be useful in a house? When you try to concentrate the prospect's attention on one range, her eye wanders to others. This is conducive to shopping instead of buying.

Dated Kitchens? Under a headline, "Is your kitchen dated?" a board on which are shown contrasting pictures of old fashioned kitchens and new, is an effective sales tool. Makes a stopping window display, or will stop traffic in the store. Every new kitchen you sell can furnish two pictures—a "before" and an "after" picture. Make each job stir up more prospects for you by getting a publicity sense—turning each sale into good publicity.

It pays to advertise the entire electric kitchen as well as just product or individual appliance. When you talk kitchen every house that has wires going to it is a prospect for something for the kitchen. When you advertise only the refrigerator, not half as many are prospects. Ads are to get people thinking **with** you. Get them thinking complete kitchens and you are bound to sell more appliances.

Salesmen with a kitchen album, one successful dealer in kitchens discovered, make a better impression. He has them carry an album with sample blueprints of kitchen layouts, a kitchen measuring kit, photos of old and remodeled kitchens, kitchen drawings in color. They endeavor to sell complete package kitchens—lock and key kitchens, where the prospect turns over the key, the kitchen is remodeled and when done, the key given back. The customer steps into a brand new environment and **loves** it. Arrange to take prospects in your car to visit satisfied and enthusiastic customers with brand new kitchens you've just sold.

YOU MIGHT TRY

Volume Serial Number is 2C0E-1A4B

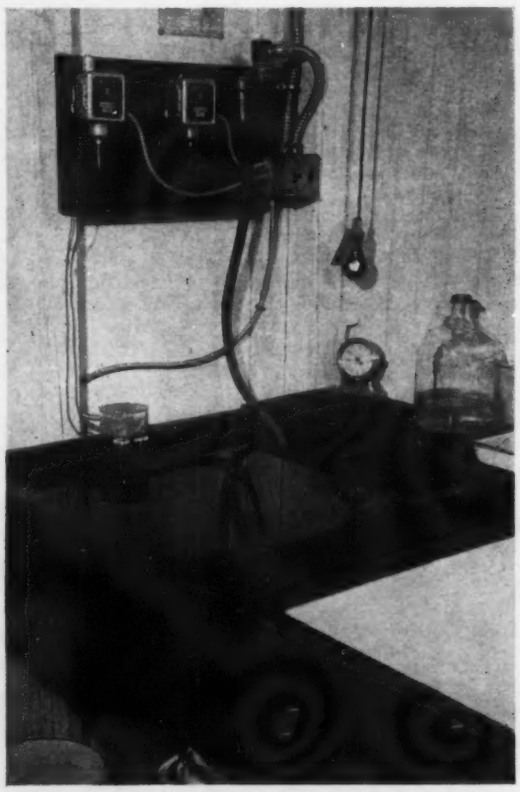
NORTHWEST ELECTRIC LIGHT & POWER ASSOCIATION

Utilization Data Sheet No. 25

SUBJECT .....PHOT-BATH TEMPERATURE CONTROL
CUSTOMER .....WESTERN ENGRAVING & COLORTYPE
TYPE OF BUSINESS .....ENGRAVING AND PHOTO WORK
SIZE OF BUSINESS .....10 EMPLOYEES
SERVICE COMPANY .....PUGET SOUND POWER & LIGHT

Prepared by H. Van Wyk
for the Commercial Section

This firm, which is situated in Seattle, was having trouble in maintaining accurate temperature in developing baths. Temperature control is essential to proper development of their plates and photos.



An attempt at temperature control was made by manually introducing cold or warm water in the developer tank to lower or raise the temperature.

An electric heating element in the bath, and a solonoid control valve in the water main, eliminated the shortcomings of this method.

The bath is prepared in a wooden tank, 26x28 in., with fluid level 5 in. from the bottom. This volume of solution is maintained at a temperature of 65-67° F. by means of a Cutler Hammer immersion unit 96 in. long, and of 500-watt capacity, thermostatically controlled.

In order to prevent tank temperature from rising above 67° F. through heat gain from the room, another thermostat controls a solonoid valve in the water line, causing it to open when the temperature in the tank reaches 67°, thus admitting water at a temperature of about 55° F. An overflow permits excess to drain off.

Advantages

The controlled bath permits: (1) continuous use of solution where previously the solution had to be discarded after each development; (2) the production of better photographs.

The electric-control installation yielded: (1) low installation cost; (2) close temperature control; (3) fully automatic control with consequent savings in labor cost.

Operating Data

Product	Photo developing
Production	60-80 per day
Labor	200 man-hr. per month
Fuel	Electricity, estimated 60 kw.-hr. per month
Operating period*	24 hr. per day
Temperature	66°F.

* Operation is so inexpensive that controls are left on continuously so that bath will always be at correct temperature.

Equipment Installed

	Rating (kw.)	Equip. Cost	Install'n Cost
1—500-watt Cutler Hammer rod-type immersion heater	0.5	$9.60	
1—Brown heat control, T415A15, 90°F		37.00	
1—V437 AK ⅜-in. solonoid water valve			
		$46.60	$15.00

NORTHWEST ELECTRIC LIGHT & POWER ASSOCIATION

Utilization Data Sheet No. 26

SUBJECT.....CLEANING MOTORS AND CHASSES
TYPE OF BUSINESS .....REPAIR GARAGE
SERVICE COMPANY .....WASHINGTON WATER POWER

Prepared by N. J. Mahar
for the Commercial Section

The air-water method is a new means of steam-cleaning motors and undercarriages of automobiles for the removal of grease, dirt and road oil. The equipment consists of an automatic electric water heater, of adequate size, and with adjustable thermostats, and of an air-water spray nozzle together with suitable length of hose.

The hot water, preferably at 170°, is mixed with compressed air by the use of the air-water gun, which sprays the hot water on the part to be cleaned with the effect of live steam.

Small garages using the equipment show an average consumption of about 350 kw.-hr. per month. In larger garages consumption averages 700 kw.-hr. per month.

Advantages

The removal of dirt and grease saves time in repairing cars. The hot-water method enables the garage to accomplish this more efficiently and to greatly reduce the outlay for solvents. Turning out a clean motor and undercarriage on overhaul and light repair work is a service which brings the garage many profitable returns.

What customers say:

Shell Service Station
St. John, Washington
Washington Water Power Company:

My equipment consists of a 66-gal. Arthur Fowler electric water tank and an air-water gun which I made myself. I have found this combination ideal for cleaning tractors, a job, which until now, I was unable to touch. This has brought me new customers and additional profit.

During the winter, a great many of the cars coming in for greasing were caked with frozen snow and mud, but my new cleaning system enabled me to clean this off and grease the cars with but little inconvenience. I also found that a few minutes spent in cleaning the motors was profitable both financially and in pleasing my customers.

Best of all, the operating cost of this equipment is very small.

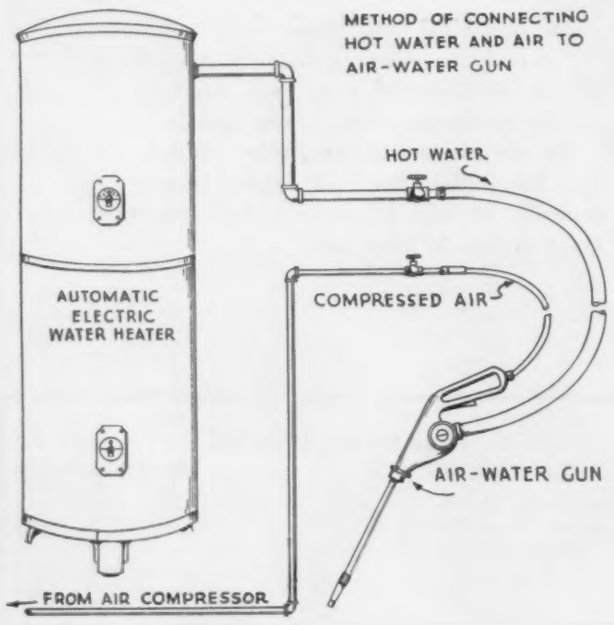
(signed) Harold Trunkey, manager

Hernas Chevrolet Co.
Davenport, Wash.
Washington Water Power Company:

When a car or truck enters our shop for repairs, it has been our policy of long standing to clean the motor before working on it and so return the car to the customer with a clean motor. This was formerly an expensive operation. We were using about 90 gal. of solvent at a cost of about $15 per month. We have found that by using a small amount of solvent, this new hot water and air method does a more satisfactory job in a shorter time. We also appreciate ready hot water in the winter time for thawing out frozen motors, radiators and removing ice from running gears. The cost of operating our 80-gal. tank has run about $3.50 per month.

Hot water has always been a problem with us but now our automatic water heater supplies us with an abundance at all times for every use.

(signed) K. Hernas



Reenforcing Rural Lines

A discussion of eight methods for increasing the capacity of existing rural plant

By J. F. Emery

DURING the last ten years there has been increasing activity in the building of rural lines to bring the benefits of electric service to farming areas. The impetus has come largely from the progressive advance in the art, making it possible economically to reach areas that were previously out of the question. It has become accepted that the rural citizen is fully entitled to electric service and on a cost basis comparable with city rates. Accordingly utilities in general have found themselves coping with this problem and meeting it to the best of their ability.

The necessity for the reenforcement of old rural lines has in general been brought about by two factors: (1) the more widespread use of electricity for major functions; such as cooking, refrigeration and incidental power, as against the earlier requirements of only lighting service; (2) the extension or continuation of existing lines.

The electrical behavior of rural lines under any given condition is well understood. However, before proceeding further on the matter of reenforcement, it might be well first to review the general characteristics of rural lines under different conditions of voltage or other forms of correction.

There are eight common methods frequently employed to gain additional capacity on rural lines or bring present regulation within acceptable limits. These are:

1. Stringing an additional wire or three-phasing single phase lines.
2. Stringing an additional wire to change system from delta to star.
3. Raising voltage without changing circuit conditions.
4. Installing regulators or tap-changing transformers at the substation.
5. Installing line regulators.
6. Installing line capacitors.
7. Increasing size of conductor.
8. Raising voltage on a portion of the line by use of a step-up transformer.

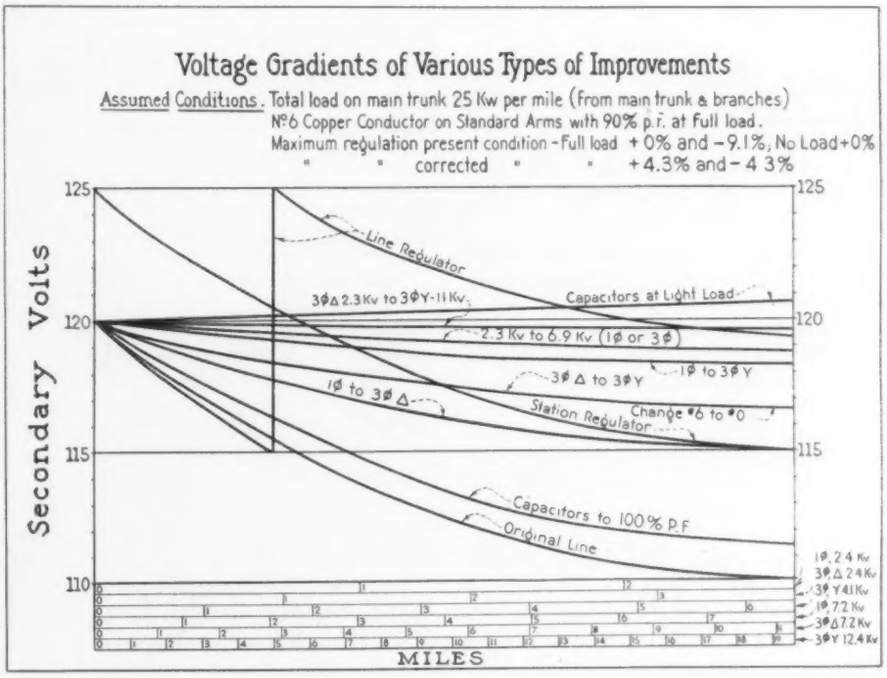
The general voltage gradients of these various types of improvement are shown on Chart I. To establish a means of comparing various methods of reinforcing old lines to gain additional capacity, it was necessary to assume certain conditions. For the purpose of this study it was assumed that the total load on the main trunk would be 25 kw. per mi. This load is built up from the load on the main trunk proper and also branch lines. A basis of 5 kw. per mi. was used, which is approximately that found on the Idaho Power system. This load is that which might be expected where the use of the rural customers justifies the building of the extension to serve. No. 6 copper conductor is assumed on standard arms with 90% power factor at full load. We have also assumed that the original line was sufficiently loaded to give 0% regulation at no load and 9.1% regulation at full load. It has also been assumed that the corrected regulation should not exceed the limits of +4.3% and —4.3% at full load.

The characteristic gradient of the various types of correction are similar for various voltages. By adjusting the scale of miles of line to conform with the voltage condition selected, one set of curves will demonstrate the possibilities of the various methods of reinforcement discussed in this article.

The voltage gradient of the original, uncorrected line is shown at the bottom of the curve. This gradient is obtained by assuming an original line of such length and with the loading as previously described to give —9.1% regulation at the farthest customer. This has the familiar drooping characteristics which proceed rather sharply at the beginning of the line and taper off toward the end where the loading is reduced.

The remaining curves show the improvement that results from the various forms of reinforcement. This same general characteristic prevails where the line is reinforced by three-phasing single phase lines, by stringing an additional wire to change from delta to star,

Chart I


Voltage Gradients of Various Types of Improvements
Assumed Conditions. Total load on main trunk 25 Kw per mile (from main trunk & branches)
№6 Copper Conductor on Standard Arms with 90% p.f. at full load.
Maximum regulation present condition - Full load +0% and -9.1%, No Load +0%
" " corrected " " +4.3% and - 4.3%
Secondary Volts
125
120
115
110
Line Regulator
3φΔ 2.3 Kv to 3φY-11 Kv.
Capacitors at Light Load
2.3 Kv to 6.9 Kv (1φ or 3φ)
3φ Δ to 3φ Y
1φ to 3φ Y
1φ to 3φ Δ
Station Regulator
Change #6 to #0
Capacitors to 100% P.F
Original Line
1φ, 2.4 Kv
3φ Δ 2.4 Kv
3φ Y 4.1 Kv
1φ, 7.2 Kv
3φ Δ 7.2 Kv
3φ Y 12.4 Kv
MILES

Comparative Costs of Reinforcing Older Rural Lines to Handle Increased Load

Assumed Conditions:
Total load on main trunk 25 kw. per mile (from main trunk and branches).
No. 6 copper conductor on standard arms with 90% power factor at full load.
Maximum regulation, present condition, full load +0% and —9.1%.
Maximum regulation, corrected condition, full load +4.3% and —4.3%.

Original Type of Line	Method of Reinforcement	Cost of Improvement	Cost* KW. × Volts	Possible† Increase of Line Mileage	Notes
Single Phase, 2-W, 2.4 kv.	Add 2-condr. for 3-phase Y	$ 548.00	$ 1.49	72.7%	No arm replacements
	Add 1-condr. for 3-phase Delta	288.00	1.30	0	" " "
	Regulators Out on Line	647.00	2.06	20.1%	
	Regulators at Substation	647.00	2.72	0	
	Change from 2.4 kv. to 7.2 kv.	1583.00	4.04	112.0%	Full salvage 2.4 kv. transf.
	Install capacitors for 100% P.F.	206.00	5.38	0	
	Replace 2 No. 6 with 2 No. 0	1592.00	5.52	20.4%	
Three Phase, 3-W, Delta, 2.4 kv.	Add 1 condr. for 3-phase Y	376.00	0.91	22.2%	No arm replacements
	Regulator out on Line	1194.00	2.68	20.1%	
	Regulator at Substation	1194.00	3.55	0	
	Change from 2.4 kv. to 7.2 kv.	2643.00	4.78	112.0%	Full salvage 2.4 kv. transf.
	Change 3-phase Delta 2.4 kv. to 3-phase Y 12.4 kv.	3019.00	5.04	267.0%	" " " " "
	Install Capacitors for 100% P.F.	318.00	6.44	0	
	Replace 3 No. 6 with 3 No. 0	3370.00	8.27	20.4%	
Three Phase, 4-W, Y, 4.1 kv.	Regulators out on Line	1742.00	2.25	20.1%	
	Regulators at Substation	1742.00	2.99	0	
	Change from 4.1 kv. to 12.4 kv.	4421.00	4.60	112.0%	Full salvage 2.4 kv. transf.
	Install capacitors for 100% P.F.	535.00	5.90	0	
	Replace 4 No. 6 with 4 No. 0	7840.00	11.07	20.4%	
Single Phase, 3-W, 7.2 kv.	Regulator out on Line	930.00	0.98	20.1%	
	Regulator at Substation	930.00	1.30	0	
	Add 1-condr. for 3-phase Delta	1010.00	1.71	0	50% arm replacements
	Install capacitors for 100% P.F.	752.00	4.43	0	
	Replace 2 No. 6 with 2 No. 0	4850.00	5.60	20.4%	
Three Phase, 3-W, Delta 7.2 kv.	Add 1-condr. for 3-phase Y	1435.00	1.15	22.2%	50% arm replacements
	Regulators Out on Line	1760.00	1.31	20.1%	
	Regulators at Substation	1760.00	1.74	0	
	Install capacitors for 100% P.F.	986.00	4.00	0	
	Replace 3 No. 6 with 3 No. 0	9800.00	7.98	20.4%	
Three Phase, 4-W, Y, 12.4 kv.	Regulators out on Line	2590.00	1.12	20.1%	
	Regulators at Substation	2590.00	1.48	0	
	Install capacitors for 100% P.F.	1805.00	5.30	0	
	Replace 4 No. 6 with 4 No. 0	23900.00	11.25	20.4%	

* Unit Cost of Improvement = $\frac{\text{Cost of Improvement}}{\text{KW. delivered} \times \text{Voltage Improvement}}$

† With regulation within +4.3% & —4.3% limits.

by raising voltage without changing circuit conditions, by installing line capacitors, or by increasing size of conductors.

The use of regulators either at the station or in the line proper produces an entirely different characteristic. Regulators provide the only means where the circuit can be adjusted to compensate for the inherent regulation as a result of load. While the regulation of the line, that is the deviation from the nominal no load voltage, may be considerable with the regulators and might at first appear to be little improvement over other methods; nevertheless, it has a fundamental desirable characteristic inasmuch as, over a considerable portion of the line, voltage rises during load periods which in turn compensates for transformer, service and house wiring regulation.

Let us consider the regulator installed at the substation or at the line terminal. It will be noted that with the station regulator the voltage gradient common to other forms of regulation prevails except in that area near the station where a rise in voltage is experienced during full load conditions. A much more desirable situation is established when the regulators are located on the line. Under these conditions it will be noted that approximately one-half the customers experience a drooping voltage gradient under conditions of full load while approximately one-half experience a rising voltage condition.

It will be noted that capacitors offer a very limited means of correction on rural lines inasmuch as it is not feasible to disconnect the units during times of light load, which means that the amount of correction that may be applied is limited to that which will not unduly raise the voltage at periods of light load.

NORTHWEST ASSN. REPORT

This is one of the papers presented by the Transmission and Distribution Committee (R. J. Davidson, chairman) at the 1940 meeting of the Engineering & Operation Section, Northwest Electric Light & Power Assn. J. F. Emery is with Idaho Power Co.

Under the conditions assumed in these theoretical lines, the amount of capacitance that may be used will not give the correction desired.

The next matter for consideration is that of evaluating the various forms of correction. Such an evaluation may be upon two bases. (1) The actual cost of correction to bring voltage within workable limits and (2) a unit cost of the correction accomplished. The unit cost of improvements is the cost of improvement divided by the kw. delivered times voltage improvement. Such an equation evaluates on a unit basis the comparative costs of the various methods of correction. While such a unit is valuable in comparing various methods of reinforcement, it should be noted that it is affected by the law of diminishing returns. The unit cost of correction rises rapidly as the regulation of the line is brought into close limits regardless of what method of reinforcement might be used.

Conditions at substations are so wide and varied that it is not possible to include substation costs that might be effected by changing line voltage. The costs considered are on the distribution line only. Where regulators are shown at substations they are considered as pole type units and mounted on distribution structures.

Summary of Results

Adding an additional phase to a single phase line to change same to delta, or to a three-phase delta to change same to star, offers the least expensive form of correction.

Line regulators offer the most inexpensive form of reinforcement on lines now operating star. Their cost is also comparable with that of adding an additional conductor as described above.

Where small capacity regulators are used, which do not serve other lines, and where good substation bus voltage prevails, there appears no reason to locate the regulators at the substation when much better results may be had by locating them out on the line.

The cost of changing conductors is generally so great as to be out of the question. (This would not apply to iron conductors or others of extremely limited capacity.)

Capacitors may be used to only a limited extent as they give only a small

improvement in line regulation from no load to full load.

Raising line voltage without changing circuit conditions; that is, 2,300-volt delta to 6,900-volt delta, is also an expensive correction that would possibly only be used where considerable additional capacity is required or lines must be extended to great lengths.

Raising line voltage from 2.4 kv delta to 12.5 kv star also shows as an expensive correction. The reason for this is that the regulation of the line is so small that we reach the point of rapidly diminishing returns. If lines were to be considerably extended, raising of line voltage would give a favorable unit cost.

To compare actual field practices with the theoretical conditions, a questionnaire was sent to 13 Northwest companies, requesting information as to their experience during the last two years. The methods used and the percentage of the various types are those that might be expected from the cost trends developed in the previous study.

The following is a synopsis of the answers to the questionnaire from 12 Northwest companies.

Methods

No. 1—Stringing an additional wire or three-phasing single phase lines.—This method was described by 5 of 12 companies, and as a common practice by two companies. An increase from delta to wye voltage due to a conversion from single phase to three phase wye, or an increase from 2.3 to 6.9 kv. usually accompanied this method. Predominating original voltage was 6.9 kv. with an isolated case of 2.3 kv. Six actual operations were mentioned involving 159.5 mi. of line and changes to 35.5 mi., the trunk circuit being the only line increased. This method was preferred after considering wire size change, direct voltage increases and regulator installation.

No. 2—Stringing an additional wire to change delta to wye.—This was used by 5 of 12 companies and as a common first step practice by two to be followed by other methods. Original voltage was about evenly divided between 2.3 and 6.9 kv. with one case of 6.9-kv. delta to 11-kv. wye with addition later of series capacitors (end load a special case). 2.3-kv. conversion was used for combined urban and rural service while 6.9-kv. conversion was common in rural areas. This method was preferred after considering direct voltage increase, substation moves and wire size increase.

No. 3—Raising voltage without changing circuit conditions.—This method was used by 6 of 12 companies where initial setup was 2.3 kv. to be changed to 6.9 kv. or 11 kv. delta. Of nine instances described, one case increased finally to 66-kv. transmission. Total line involved in changes amounted to 275 mi. Worst drawback to this method was the cost of transformers involved, unless they were readily usable in other locations.

No. 4—Installing regulators or tap-changing transformers at substation.—This was used by 6 of 12 companies on lines, always at 6.9 kv. or above, the step regulator being the only device mentioned. In ten cases cited, 320 line mi. were involved. This type is most satisfactory on lines with long distances from the substation to load or with poor transmission regulation. This is customary step when load warrants the flexibility of control possible. The outstanding objection to this method was that it caused a high voltage near the substation.

No. 5—Installing line regulators.—This was used by 6 of 12 companies on lines of 6.9 kv. or above with very good results in all cases. This method affords much better control, especially with concentrated loads. Of the 10 cases, only one induction regulator was used. This method also can produce a high-voltage condition near the regulator.

No. 6—Installing line capacitors.—Only one case was mentioned and that was on a 19-kv. installation on a 22-mi. line with end loading. Two companies considered capacitors but eliminated them.

No. 7—Increase wire size.—This method was used by 3 of 12 companies but only on 2.3 kv. with scattered load or to replace iron wire with copper and then more as a last resort after regulators had been installed. Expense was the biggest drawback to this method.

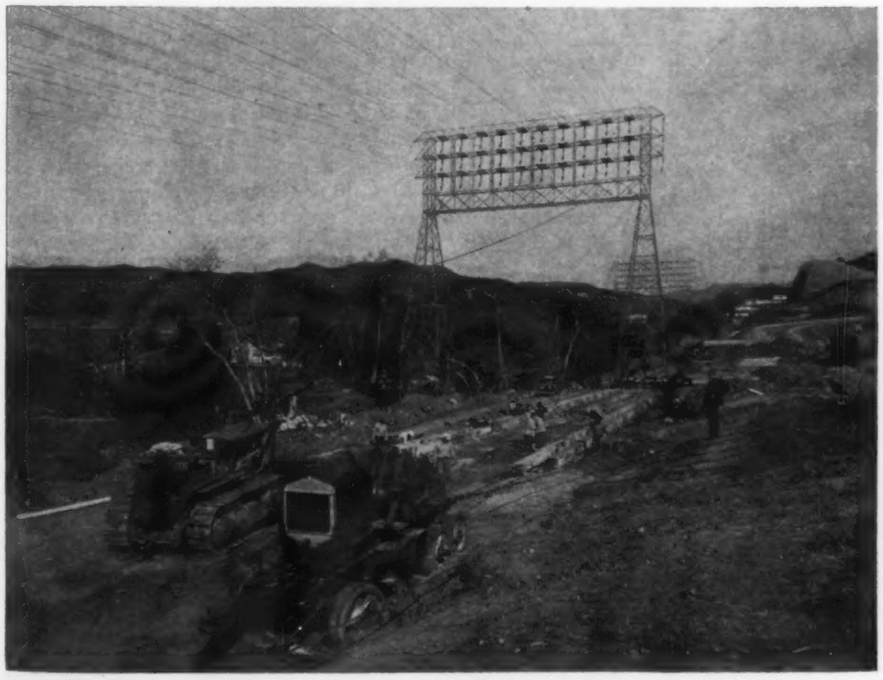
No. 8—Raising voltage on a portion of line by use of a step-up transformer.—This was used in four instances by 2 of 12 companies, normally to increase 2.3 kv. to 6.9 kv.

Miscellaneous

Additional unit substations were used by 2 of 12 companies to reduce 11 kv. and medium high voltage to 2.3 kv. at the load centers of feeders instead of the conventional end feeding.

The method used was generally governed by the degree of loading and progressed in the order (1&2), 3, (4&5), 8, 7, Miscellaneous, and 6.

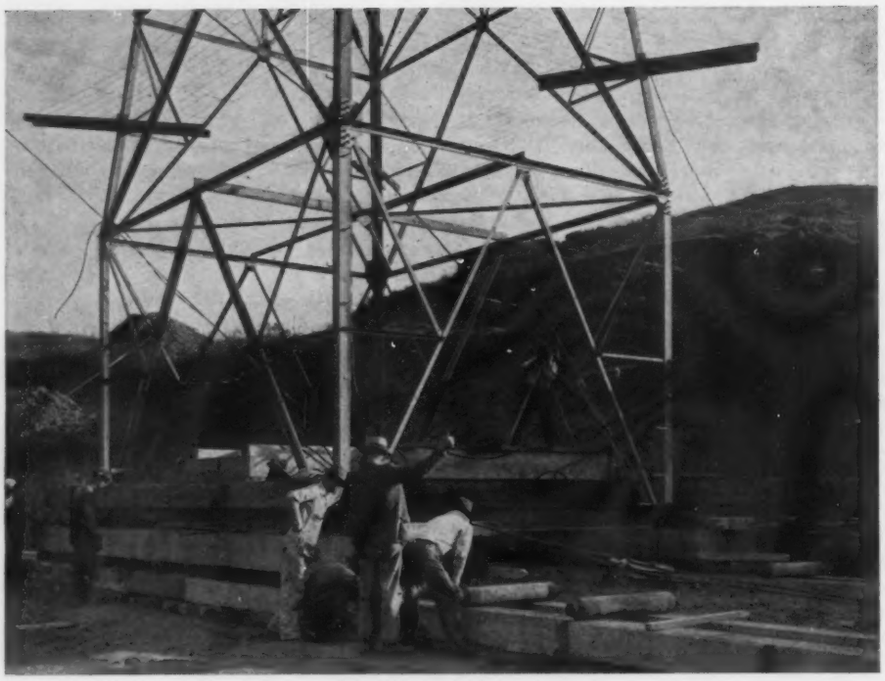
The structure near Eagle Rock being made ready for moving. Hoists used for pulling appear in foreground



Transmission Move

Heavy 12-circuit structure placed in new position while lines remain energized

A highway-straightening project recently necessitated Southern California Edison Co.'s relocating one of its 130-ft. structures carrying 11 circuits through Eagle Rock, near Los Angeles. Building a new structure in the new location was considered but turned down when experts in moving heavy equipment said the existing tower could



Tower being moved. View shows arrangement of I-beams, timbers and rails; the transit is set up on the structure itself to check distortion during moving

be successfully moved 212 ft. to its new location.

Pacific Crane and Rigging Co. undertook the work and succeeded in moving the structure—which, with conductors, weighed 100,000 lb.—without necessitating an outage and with the introduction of less than 1 in. of distortion.

The supporting towers (see picture) are 100 ft. from base to base, and the bridge carries nine 66-kv. and two 16-kv. circuits, each composed of three No. 4/0 stranded copper conductors under an approximate tension of 2,000 lb. at 75°F. The structure weighs 68,500 lb., the conductors 31,500 lb.

The tower was moved on rollers, running on rails. The rails consisted of two 12x12-in. timbers, laid on 6x8-in. ties, which were set on a well-compacted earth roadbed. Building the roadbed involved moving 2,500 cu. yd. of earth.

On the structure, a 12-in. I-beam was bolted to each transverse face of each supporting tower at the footing plates. The I-beams were jacked onto timbers, by means of screw jacks, and these timbers rested on the rollers, which were of 7-in. orangewood.

Four gasoline-driven hoists provided the motive power. Pulling lines were attached at the front I-beam, and longitudinal guys front and back at the level of the middle conductors—these guys being run to separate hoists for each end structure. Both transverse and longitudinal safety guys were also used.

The conductors were placed in stringing sheaves supported by insulator assemblies. Each sheave was tied down with another string of insulators to maintain rigidity of the insulators and the conductors.

It took four hours from the time the structure was jacked from its original footings until it was jacked onto its new ones. One hour was required for the actual moving, the remaining three for checking distortion. This was done by taking measurements to transverse marks on the tracks, by setting up transits on each longitudinal center line, by hanging plumb bobs from the top of the structure and from the bottom of the bridge at each end, and by setting up a transit on a platform at the base of a tower, this transit being used to read a scale set on the center line of the bridge.

Cost of the job amounted to only half the amount appropriated for replacing the structure with a new one. In addition, the job was completed without interruption or jeopardy of service, and without personal injuries or property damage.

Improved City Distribution

By D. A. HORD
Northwestern Electric Co.

Use of Multi-Conductor Cable for Services

Our company has installed very few cable services, yet we anticipate a more extensive use of this type of service. During the past two years we have experienced an increasing demand for such service installations. This would indicate that the public has recognized cable service as more desirable from a standpoint of appearance.

The recent trend in the construction of new bungalow apartments and other low constructed houses in the Portland area, has practically eliminated the possibility of installing open-wire service on these buildings. Windows, drain pipes, and other interferences usually come to a point within a few inches of the eaves. The space available then for service wire installation becomes quite limited and for this reason a cable service must be installed.

Our company's use of multi-conductor cable has been confined only to service entrance cable. The special fireproof insulation of this type of cable makes it suitable for installation, without insulators, on buildings. Service drop cable, according to the National Code, cannot be installed on buildings unless mounted on insulators. For this reason we have adopted the use of service entrance cable which we install by means of ordinary metal pipe straps.

One of the objections to the use of service cable is the fact that it is not suitable for splicing. This difficulty will be encountered from time to time where cable re-adjustments are necessary in the moving of poles or in the remodeling of buildings.

NORTHWEST ASSN. REPORT
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The use of service cable over a period of time will naturally result in an accumulation of short pieces having little more than scrap value. Since cable is not suitable for splicing, an accumulation of odd lengths will result in a more substantial loss than in a similar quantity of W.P. wire.

An open wire service installation is less expensive than either a continuous cable installation from the pole to outlet, or a combination of open wire and cable. The material cost, for instance, of 40 ft. of service-entrance cable plus the cost of 60 ft. of 3-No. 6 open wire is about $2.70 more than that for 100 ft. of 3-No. 6 open wire. For a 100-ft. continuous cable installation from pole to outlet, the material cost is about $7.30 in excess of an equal length of 3-No. 6 open wire.

Disregarding the additional labor and material costs, the principal objection to

a cable service is that the entire stress centers at one point on the building. With an open wire service the stress is distributed at three different points.

Use of Multi-Conductor Cable for Overhead Secondary

One company reports the use of multi-conductor cable for secondaries as well as for service drops. A recent installation of this kind was made in a new residential area.

The line construction details of the distribution system in this area are briefly as follows:

Thirty-foot butt-treated poles were used throughout. A No. 4 W.P. wire on a pole-top pin served as the primary circuit. This circuit is an extension of a 4,000/2,300-volt grounded-neutral system. At a point 3½ ft. from the top of the pole a 3-conductor No. 4 wire serial cable was installed. This cable is suspended on a 5/16-in. messenger with cable rings similar to the Telephone Company's construction. The messenger cable is fastened to the pole with a thru-bolt and 3-bolt clamp. At each pole the cable is opened and brought out to terminals for future service connections. Transformers are bolted directly to the side of the pole above the cable. Service drops are also of the multi-conductor type fastened to both pole and house by means of wedge grip service brackets.

A total of 3,361 ft. of line, including 3 transformers and 3 services, was installed. The cost of 3-wire aerial cable was approximately 20% more than standard pole line construction.

Use of Special Tree Wire

One company reports that a study of methods for adequately serving a growing residential district in a medium size city indicated that a higher primary voltage would be more economical than installing an additional district substation. An existing 2,400-volt delta-connected feeder from a main substation was becoming overloaded, and the voltage regulators were working up to their limit. After making a survey of local conditions, the company found it impractical to convert to a 4,000-volt wye system. A suitable route for a main 6,900-volt feeder was then selected and estimates prepared. These proved that it would be more economical to serve this entire area at the higher voltage than to install a local substation and continue the distribution at 2,400 volts.

A bad tree condition seemed at first to preclude the possibility of using a higher-voltage system. A study was then made of the available types of tree wire and aerial cable that might be used. Careful attention was given to provisions for suitable shielding of such cable to avoid radio interference, particularly since it was planned to convert this later to a 12-kv. wye circuit. It was finally decided that suitable cable could be provided for installation through trees and consequently a higher voltage system was approved.

The job is not yet completed and actual operating experience is therefore not yet available. While this is not an innovation, it does indicate a trend toward higher urban-distribution voltage with smaller conductor sizes than necessary for the lower voltages. Better voltage regulation is also made possible. Furthermore, an economy is effected in the reduction of overall costs.

Banking Transformers in Parallel

Our company follows the practice of banking in parallel from two to five transformers tied in solid on a common secondary bus. These are fused only on the high side—fuse rating 3½ times normal current. We have lost a few small transformers but not enough to justify a general practice of fusing on the low side of all transformers banked in parallel.

Our company reports that they have for many years followed the practice of paralleling from two to four transformers tied in solid on a common secondary bus. Recently, however, they have to a limited extent increased this number by tying in two or more banks by means of secondary fuses. These buses are ordinarily tied together at a point of minimum current flow by fuses not in excess of a 40-amp. rating: They also install fuses on a secondary bus between two transformers which differ in size considerably. Such fuses are installed primarily to prevent a dangerous overload on the smaller transformer in case the primary fuse blows on the larger transformer.

Another company reports that they have been using for many years a 4,000/2,300-volt grounded neutral system with gridded primary and secondary, forming a complete network for each individual primary circuit. Each circuit is composed of a No. 4 copper-wire primary and secondary grid or network, with all transformers in the circuit area banked together on the primary and secondary side. Their practice is to fuse each transformer on the primary side only. With this system they have obtained excellent voltage regulation and continuity of service.

General Use of Solderless Connectors and Splicing Sleeves

The use of solderless connectors and splicing sleeves gives evidence that these two additions to modern line construction are outstanding as labor saving devices. Not only can a material saving in time be effected, but a splice made with the use of these devices is far superior mechanically and electrically over the old soldered joint. It has been our experience that soldered joints tend to work loose either because of faulty workmanship or repeated stresses set up by weather conditions. Many of our low voltage complaints have been traced to defective soldered connections. An appreciable number of these faulty connections have been found while making our annual load tests. During these routine inspections, a lead on the low side of the transformer to the secondary bus was often found to be open circuited. These conditions, of course, were found only on transformers that were banked in parallel with others on a common secondary bus. From our experience, soldered connections have not proven too reliable. For this reason, we are using solderless connectors and splicing sleeves whenever possible.

Modern Practices Followed in Guying Overhead Lines

Further progress in modern line construction is borne out by the more general use of guyeye bolts, or their equivalent, for attaching guy wire to poles. In place of wrapping the guy around the pole, as was formerly done, the guy is now attached to an eyebolt through the pole or to a separate eye which in turn is attached to a galvanized machine bolt. Either method serves adequately well—the choice being merely one of individual preference. The older method quite often necessitated the use of pole shims, 'J' hooks, and other miscellaneous material. This material is, of course, not required with the use of eyebolts. Furthermore, two linemen were usually required on a pole when installing guys according to the former method, particularly if the size of the wire was larger than 5/16 in. However, by using eyebolts on the guy-end assembly, only one lineman on a pole is now required since much of the pole work has been eliminated. The reason for this is that the whole guy assembly can be made up by men on the ground.

Furnace Surges

High voltage on house circuits due to operation of oil burners

Under certain conditions, the operation of electric igniting equipment on oil furnaces in residences will produce high-voltage surges on branch circuits. Northwestern Electric Co. has on record several cases in which such surges have caused failure of light globes, and at least one in which a fire started in an appliance cord.

The equipment involved in each case consisted of an electrically-ignited oil burner having a mercury stack switch,

an unshielded step-up transformer and a condenser for filtering out radio noise resulting from the ignition spark. Essential to the production of high-voltage surges, according to O. W. Hurd, engineer for Northwestern, was the combination of such equipment with a circuit having constants which produce resonance.

The high-voltage surge is produced during the instant of operation of the stack switch and is thought to be caused by the rectifying action that momentarily takes place within the mercury tube. No cases are on record where a mercury stack switch was not involved.

Remedies include the following: changing the stack switch to another type; changing the filter condenser which is connected across the transformer primary; transferring the oil-burner igniting equipment to another branch circuit having constants which are different enough to prevent a resonant condition.

Contact with engineers of a Portland concern dealing in oil-burning equipment revealed that the phenomenon has been recognized by the furnace manufacturers and that steps have been taken to prevent its occurrence. In modern installations, electrostatically-shielded transformers do away with the necessity for filter condensers. The shielded transformer has been found more effective over a wide range of radio frequencies in suppressing radio interference—an advantage which is realized in addition to forestalling a possible surge.

Capacitors

Voltage correction obtained with static units at savings

By H. E. JUNG
Southern California Edison Co.

Voltage correction by the use of synchronous condensers has been practiced for many years, but has been applied usually in large blocks on the transmission and sub-transmission lines. Reasons for this application are its relative cheapness, and the control which may be exercised.

Static condensers, or capacitors, have had small application since they were relatively expensive, not always reliable, bulky, and hard to apply.

Static capacitors have now been perfected to a point of high reliability, compactness, and relative cheapness, and can be applied in a field which the synchronous condenser, due to its high cost in small units, could not enter. This field is voltage correction of small units, such as individual circuits out of distribution substations.

Southern California Edison is making two applications of static capacitors for voltage correction on two different types of 4-kv. circuits, the first application being on urban circuits with rather concentrated loads, and the second on a long rural circuit with distributed loads.

PCEA REPORT

This is one of the papers presented before the Operating Economics Section, at the 1940 meeting of the Pacific Coast Electrical Association

The reasons for the selection of capacitors, and the economic benefits which it is expected will accrue, seem to me to be fully as essential as the method of application, and I present the following as case histories, and give a minimum of statistical data.

Case 1

In the early part of 1939 a study was made of the Beverly Hills substation, which serves a high class of residential load and a rather concentrated business district load. The economics of the study showed that it would be necessary to utilize the existing substation location for any additions to substation capacity, and that no other locations should be used either for another radial substation or for small substations of the "unit" type.

Due to physical limitations, the number of 4-kv. distribution circuits which can be brought out of the existing substation is limited. This means that, in order to utilize additions to substation capacity at the existing location, each of the circuits must be loaded up to about 180 amp., or to nearly the full capacity of the 200-amp., 5% feeder voltage regulators.

Before arriving at the limit of the present substation capacity of 18,000 kva., or 2,500 amp., there are anticipated three years of growth beyond the last peak load of 2,000 amp. Meanwhile the voltage level on all the circuits will tend to be reduced, since each additional 1,400 kva., or 190 amp. of peak load will decrease the bus voltage by about 1 volt. Also, the various circuit voltages will be further reduced by their inherent regulation as their individual loads are increased.

The substation is fortunately located close to the business load, and reasonably in the center of most of the residential load, and the circuits supplying these loads present no great problem in voltage regulation. There are, however, five circuits which are quite long, having an average feeder length of 6,700 ft. of No. 2/0 wire and an average feedback length of 4,800 ft. of No. 4 and No. 6 wire. The greatest total length of any feeder and feedback is 13,800 ft.

During the last winter peak the load on these five circuits averaged about 110 amp., and, at the same time, the unregulated bus voltage varied between 120 and 124 volts. Since it is desired to maintain 124 volts at the center of distribution, and the average feeder regulation on the five circuits is 3.86 volts, there should have been only approximately 120 volts at the bus, plus 6 volts boost from the regulator, minus 3.86 volts feeder drop, or 122.14 volts at the center of distribution.

To raise the voltage level at the centers of distribution, it is planned to install pole-type capacitors on these five longest circuits, at points such that there will be obtained the benefits of a rise in voltage not only on the circuits involved, but also on the bus at the station. The ultimate installation is to be 2,250 Ckva., but during 1940 there is planned the installation of only 1,200 Ckva., with units to be distributed to the best advantage for present requirements and, as nearly as can be predicted, for future requirements. The proposed 1940 installation provides the required 124 volts at the center of distribution on all circuits except one, where only 123.6 volts will be available. On this circuit approximately 0.9-volt gain is also provided on the feedback by installing capacitors near the end of the feedback. The 1940 installation of 1,200 Ckva. will provide an increase in the bus voltage of approximately 1.2 volts.

The proposed ultimate installations are approximations based on arbitrary peaks of 180 amp. per circuit. While

Table I

Feeder Size	Length	Ohms Regulation	With Existing Peak of 120 Amps. Ckva.	Volts Drop	Volts Gain	Net Reg.	Peak Volts Available	With Future Peak of 180 Amps. Ckva.	Volts Drop	Volts Gain	Net Reg.	Peak Volts Available
No. 2/0	4500	.89	150	3.08	.46	2.62	124.6	450	4.62	1.38	3.24	124.0
Feedback												
No. 2/0	600 }	5100 3.39		3.52	.59	2.93			5.29	1.77	3.52	
No. 6	4500 }											
		TOTAL 4.18		6.60	1.05	5.55	121.6		9.91	3.15	6.76	120.4

Table II

Item	Estimated Capital	Estimated Annual Carrying Charges
Feeder Capacity Gained	$19,600	$2,940
Substation Capacity Gained	5,000	500
Sync. Condenser Capacity Gained	9,600	960
Total	$34,200	$4,400
Less Capacitor Installation	12,000	1,800
Net Gain	$22,200	$2,600

peak loads will perhaps exceed 180 amp., it would be uneconomical to provide correction for loads which will exist for only a brief period, and 180 amp. represents a practical compromise. If it is seen that a circuit will ultimately have peaks of 200 amp., then voltage correction for this load will be provided.

Table I is an example of voltage conditions on one of the circuits.

The first installation of 150 Ckva. has already been male, and the remaining 1,050 Ckva. are being installed as work will permit during the balance of this year.

The question of the relative advantages of static capacitors as compared to those of synchronous condensers is easily answered in this particular installation, because, to obtain the needed voltage increase, static capacitors can be applied to those circuits only where voltage correction is required. A synchronous condenser of 5,000 Ckva. would be required to accomplish the voltage gain of, roughly, 5 volts which will be obtained with 2,250 Ckva. of capacitors. If it is estimated that synchronous condenser capacity costs $8.00 per Ckva., then 5,000 Ckva. to correct the entire 4-kv. bus would cost $40,000, whereas only 2,250 Ckva. to accomplish the same result on only the circuits where it is required will be installed at a cost of about $10.00 per Ckva., or $22,500, resulting in a saving of $17,500. There is also a definite advantage in having capacitors pole mounted, and thus releasing valuable substation space.

Any cost analysis of voltage betterment naturally reverts to feeder capacity, which is determined by voltage limits. Under the present conditions, the capacity of the five circuits is 335 amp., with 124 volts available at the centers of distribution. With the installation of 1,200 Ckva., 124 volts can be maintained at the centers of distribution, while the combined capacity of the five circuits can be increased to 650 amp.—a net gain of 335 amp., or the equivalent of 1.7 circuits of 200 amp. The 2/0 feeders of the circuits and the regulators represent an investment of approximately $11,500 each. The 1,200 Ckva. will, therefore, release for use 1.7 feeders at $11,500 each, or feeder capacity with a value of $19,600.

In addition to feeder capacity gained, the station peak will be reduced about 500 kva., which, at a unit value of about $10.00 (excluding regulators), will release for other load, plant with a value of $5,000. Another item is the value of transmission and generation plant released. Since sufficient Ckva. is usually provided to keep generation near unity power factor, the value of capacitor installation in this respect is determined on the basis of the value of synchronous condensers released. The unit cost of these, as applied to the system, is approximately $8.00 per kva. The 1,200 Ckva. will, therefore, release synchronous condenser capacity with a value of $9,600.

The economic benefits of this installation then are as shown in Table II.

Thus, it appears that, instead of spending money and gaining voltage regulation only, there is obtained a sizable bonus of additional plant capacity.

Case 2

The second case concerns a rural distribution circuit located in an area isolated from the main body of the system, where there is a substation served at 11 kv., and from which distribution is at 4 kv. The area served is definitely bounded, and transmission facilities to serve the outlying portions of it are limited. The area is, roughly, 6 x 7 mi.

The 11/4-kv. substation is located in the town, and the rural areas immediately adjacent are within reasonable distances for maintaining good voltage with normal loads. There is, however, one circuit serving a rural area west of the town, which is longer than is desirable; in fact, from the substation to center of distribution is about 3½ mi., and from the center of distribution to the farthest point on a feedback is approximately another 6 mi.

The slow but constant load growth in the entire area resulted in a general decrease in voltage levels and a condition where a re-apportionment of load to the various circuits was required, but which, when completed, left the one long rural circuit with not much better voltage conditions than it had previously.

The circuit is equipped with a 5-10%, 200-100 amp. feeder voltage regulator, and at the time of the study the circuit was loaded over peak periods to nearly the 100-amp. capacity, with the regulator connected for 10% boost. No reconnection of the regulator to obtain greater boost was possible. Also, transferring all load within the range of other circuits would not obtain a great gain in voltage, and, if this was done, as the load continued to increase there would be a gradual return to the present voltage level, with no permanent relief.

Alternate remedies were available—among them: Building a new No. 2/0 feeder, and establishing a new circuit, separated from the existing circuit, at an expense of about $7,000; or the establishment of another small 11/4-kv. substation costing about $7,500. Because it would be within a geographical 2½ mi. of another substation, the latter remedy was objectionable, and was not critically examined.

In view of the type of load, both of these remedies seemed too expensive, and the use of pole-mounted shunt capacitors was investigated. Several different combinations and locations were considered before the final arrangement which seemed most beneficial was found.

The scheme adopted has the advantage of deferring the investment required for an additional circuit for a period estimated, on the basis of past growth, at five years. However, to do this there must be maintained a maximum load on the circuit within the 100-amp. capacity of the feeder voltage regulator, which entails other circuit changes. Since these changes will be required to meet growth of load within five years, they are a justified investment meanwhile put to good use.

Therefore, it has been elected to use capacitors with economic benefits estimated in Table III.

It is believed that the capacitors will be entirely salvable because of their increased reliability, the ease with which they can be moved and reinstalled, and their widening field of application.

Table III

			5 Years' Estimated Carrying Charges
	Additional Circuit	$7,000.00	$5,250.00
or	180 Ckva. capacitors	1,500.00	
or	Other circuit changes		
or	(Average investment over five years)	2,200.00	
		$3,700.00	$2,775.00
	Difference in carrying charges		$2,475.00

ELECTRICAL WEST

The All-Industry Magazine of Progress

Established 1887 and Incorporating the "Electrical Journal," "Journal of Electricity, Power & Gas" and "Journal of Electricity"

McGRAW-HILL COMPANY OF CALIFORNIA
68 Post Street, San Francisco

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Practical Cooperation

THE NEW CONTRACT between Pacific Power & Light Co. and Bonneville for the purchase of 1,500 kw. of Bonneville power for the company's Astoria district is a practical example of the kind of cooperation proposed by the private utility industry of the Pacific Northwest to the Federal plants in that area. By its terms, Bonneville power is to be distributed to a far corner of its transmission area, carrying the benefits of its tax-subsidized low cost to the electric consumers at that remote point, with a minimum public investment in Federally-owned transmission lines and without destroying or taking over any part of an existing private utility.

Astoria, lying at the mouth of the Columbia River, has long been served from a steam generating plant in that city. Growing load in the area served would soon require additional investment in generating capacity. The surplus power in the Northwest created by the Federal Government will, under this contract, be utilized in place of new private investment in generation. This will lower the cost of power in the district and this saving will be given to the consumers in the form of reduced rates, in line with the oft-repeated promise of the company and in accord with the spirit of the Bonneville law. In other words, the Astoria district does not have to substitute government for private ownership to secure the benefits of Bonneville power.

Under the contract the company agrees to use its own transmission and ditsribution facilities to transfer additional blocks of Bonneville power to an adjacent REA and a PUD if they acquire their own distribution facilities and contract for Bonneville energy.

In short, here is the integration of an existing private utility system with the Bonneville system that will accomplish the exact purposes of the Bonneville Act without forcing public ownership on any district that does not want it, and without destroying a single dollar's worth of private utility investment. In other words, this cooperation will: (1) widely distribute Federally-developed power at lower rates to ultimate customers; (2) avoid unnecessary investment by the general taxpayer in Federal transmission lines; (3) retain for the benefit of local taxpayers a large tax-paying private enterprise; and (4) preserve the American principle of free enterprise.

Too Deep a Cut

A MATTER of vital concern to the whole electrical industry of southern California is the drastic cut in the new business budget of the Los Angeles Bureau of Power & Light proposed by a so-called "reform" majority of the Board of Water and Power Commissioners. Reduction of the $1,493,600 budget suggested by Business Agent Burdett Moody to the $734,571 figure recommended by the consulting engineers, who have been employed to investigate and report on the Bureau's operations, would seriously retard electrical development in the city, to the disadvantage of all branches of the electrical industry and the Bureau's customers as well. The seriousness of the proposed curtailment is indicated by one item alone—the reduction of the Bureau's advertising appropriation from $184,000 to $85,000.

Unfortunately those appointed to administer publicly-operated utility systems are too frequently totally inexperienced with the intricacies of the business. One of the popular misconceptions is that because delivery of electric service is a monopoly, there is no competition, and hence no occasion to spend money to develop the business. The feeling is that because the utility operates the only store in town providing electricity, people must trade there. Nothing is further from the truth. Experience demonstrates that there is plenty of competition — from natural gas, from the people who sell automobiles, vacations, furniture

and everything else the public wants to buy. Paradoxically electricity cannot be used unless the devices and appliances to utilize it are purchased. Part of the obligation of public service vested in the utility is to see that the public can and will purchase this utilization equipment.

A second misconception is that if electric rates are sufficiently low, people will use plenty of electricity. Here again, experience shows that low rates of themselves will not promote use. There must be a carefully planned, well-coordinated and extensive sales promotion program to insure greater consumption and hence customer enjoyment of the benefits that full electric service provides. For proof, it is only necessary to contrast the consumption records of some of Los Angeles' neighboring municipal utilites, where there has been no promotion, with those of the Bureau. It is empirical that low rates come with increased use. Increased use only results from intensive sales activity.

Unless those charged with approving the Bureau's budget can be made to appreciate these facts and the proposed curtailment modified, the electrical industry in that region will suffer from a greatly restricted market. The Bureau has an enviable record of progressive sales development. To discount its promotional efforts by a 50% reduction at this time would simply mean throwing the market over to competition.

Let Saboteurs Look Out

IN TIMES like the present, with emphasis on national preparedness, the European war and the ease with which "fifth columnists" paved the way for invaders, it is difficult not to become afflicted with a bad case of melodrama. Were it not for what happened abroad and the very obvious concern that the government is showing with respect to internal and external conditions, one would almost feel that the fear of sabotage and fifth column activities on the electric supply of this country might be the result of a superheated imagination and nervous tension induced by an overdose of Kaltenborn. However, since the utilities have in their trust the safeguarding of facilities necessary to the very life of the modern communities they serve, they cannot do otherwise than give very thoughtful attention to possibilities of sabotage, however dime-novelish these may appear superficially.

Electric utility properties, being scattered literally all over the map, give the appearance of being exceedingly difficult, if not practically impossible to protect. Particularly is this true here in the Far West where systems extend from remote hydro generating plants to far distant load centers. However, the prospective saboteur can be protected against to a marked degree. At least it is possible to assure him of a warm and unhealthy welcome at points that are vulnerable and to confine any probable fifth column activities to places where possible damage can be corrected in a hurry.

Here are some suggested protective measures: An analysis can be made of systems to determine the most vulnerable spots, followed by the marshalling and earmarking of equipment to meet possible emergencies at such locations. Skulkers shun light; hence it would seem advisable to both fence and floodlight generating and switching stations. At major points of vulnerability guards and patrolmen might also be placed. Properties can be closed to all visitors. Emergency repair trucks can be stationed at strategic locations around the system. Vulnerable equipment can be screened, and where necessary, completely closed off and isolated. Arrangements can be made with adjacent systems for borrowing both manpower and equipment in case of emergency.

It is to be hoped that fears of possible sabotage are groundless. However, the best insurance against it is preparedness for any eventuality.

With Pride We Point

WESTERN companies again have distinguished themselves and the West by winning a lion's share of the Edison Electric Intsitute Awards and honorable mentions. Washington Water Power Co. was especially honored in both the award of the industry's ranking recognition, the Charles A. Coffin Medal, and the National Electric Water Heating Council Award. Pacific Gas and Electric Co. received the Thomas W. Martin Award for "the greatest contribution to the advancement of rural electrification."

The Coffin Medal, given for a "distinguished contribution to the development of electric light and power for the convenience of the public and the benefit of the industry," has twice before come to the West in recent years.

Sharing honors with honorable mentions were Idaho Power Co. and Portland General Electric Co. on the National Electric Water Heating Award, thus giving to the West a preponderance of recognized leaders in the industry nationally. That these companies keep winning such recognition is evidence of sustained and continuous effort. As pioneers many such companies set high the goals by which such awards are measured. To so exceed their own high records of past years enough to win over other companies whose progress is more recent and hence more spectacular, is honest tribute to genuine accomplishment and ceaseless energy.

INDUSTRY ORGANIZES *For National Defense*

ALERT to what is happening in Europe, the American people are setting out to strengthen their defenses against aggression from any quarter. Already the government has laid down an initial program to that end.

The surest defense against aggression is the ability to resist it. If we are known to be well prepared we may avert attack. If we cannot avert it we shall be armed against it. But preparedness against war means preparedness to wage war.

And modern war is an industry. Like every other industry, it is a matter of men, materials and machines. Fighting men must be skilled workers, trained to use an arsenal of special tools and equipment that are just as diversified and just as essential to success as those of any other industry.

The plant, supplies and personnel of war must rival in efficiency those of any peace time industry. For the stakes of success or failure in war are not paid in money profits or losses: they are paid in the lives and property of the people, in the security — perhaps the survival — of the nation.

* * * *

Sound national defense calls first for a comprehensive program, carefully planned to back up a clear-cut policy as to what we expect to defend. Next comes the appropriation of funds to realize that program. These first steps are vital: they are up to government.

Then program and appropriations must be translated into performance. Native raw materials must be produced, processed and stored. Our meager supplies of strategic materials of foreign origin must be built up until we have accumulated ample stockpiles against the use and wastage of active war. And most urgent, because it is most complicated, raw materials must be manufactured into the innumerable items required to equip the modern army.

We of McGraw-Hill, living with American industry as we do, are keenly aware of the effort that will be required to produce the materials and equipment now needed to modernize our national armament.

Tanks and anti-tank guns, airplanes and anti-aircraft guns, machine guns and automatic rifles, trucks and tractors, destroyers and supply ships—these are but a few items from the endless inventory of military and naval equipment that we must produce by scores, hundreds and thousands, even to arm an Initial Protective Force, behind which we might rally our national resources for decisive effort.

Obviously the army and navy must count on American industry for an ample continuous supply of this equipment, and industry must organize to produce it in vast quantities. This means the construction and adaptation of manufacturing, transportation and storage facilities, the organization of competent executive and technical staffs, the training of skilled craftsmen in numbers adequate to maintain exacting production schedules. All this, in itself, is an industrial organization problem of the first magnitude, but upon it is imposed still another and vital specification—*sustained speed.*

For time is the all-essential ingredient of modern war. It cannot be bought with any appropriation, however great; once lost, it cannot be recaptured; we must make effective use of it while we still have it. And at this juncture we have none to waste in fumbling, jockeying or experiment.

* * * *

Two courses are open to carry out such a program.

1. We might adopt the totalitarian plan of nationalizing industry, conscripting the wealth and labor of all, and suppressing the normal incentives and management of industry in favor of the authority and control of government officials.

2. Or we can stick to the American way of achieving national unity and efficiency by intelligent cooperation between industry, labor and government.

There are those to whom the first will appeal as being the more direct. But I am convinced that most Americans will insist that the job be done in the American way. And in this preference the President, speaking for government, already has indicated his concurrence.

But effective cooperation in so complex and unfamiliar a task demands the utmost of mutual understanding and confidence from all concerned. Confusion of purpose and conflict of opinion are bound to arise — have, indeed, already arisen. Needs and capacities in many fields must be reconciled, relative priorities for various products must be determined, specific parts of the whole program must be allocated, supervised and coordinated with other parts. Government officials, smarting under the whip of urgency, must render quick decisions on highly technical matters, while industrial executives, masters of their own operating technique, must adapt themselves to abritrary and unfamiliar requirements.

Under such conditions, many problems will arise that must be worked out between the men of industry and those of government. Some of them will be the more acute because of the restrictions under which industry has had to work during recent years—restrictions that have curbed not only the expansion of plant capacity, but also the development of improved processes and the supply of skilled workers. Now, from this sag in our industrial growth, many departments of industry must undertake an overnight expansion of capacity to meet the exacting time schedules of national defense. So industry must look to government for the cooperation that will enable it to expand its facilities promptly and yet write off in reasonable time its heavy emergency investments.

* * * *

If we are to deal wisely with these situations, and many more we cannot now forsee, everyone engaged in any part of the defense effort must be willing and able at all times to get a fair understanding of the problems of the others. To help maintain such an understanding McGraw-Hill is peculiarly fitted.

1. By the organized exchange of views and information among our 24 papers, we can help to coordinate the thinking and practice of the 1,000,000 executives, technicians and operating men who are their readers, in matters that have to do with their part in the defense project.

2. Through constant contact with government agencies and the men of industry, our papers can interpret to industry the needs and policies of government and to government the problems and requirements of industry.

3. For the men of industry, each of our papers will expand its regular service as a clearing house of technical and operating data, with special reference to the needs of plants that are producing defense materials and equipment.

To forward these objectives we have set up within our company a National Defense Editorial Board. It is composed of the chief editors of our publications that serve the functions and industries that are of key importance to the defense effort. Made up of men intimately familiar with the personnel and practice of their industries, this board will simulate and supervise the activities of McGraw-Hill papers insofar as they can contribute to the defense effort. It will outline basic editorial themes, directed to the forwarding of that project, to be adapted by each paper to the special needs of its specific field.

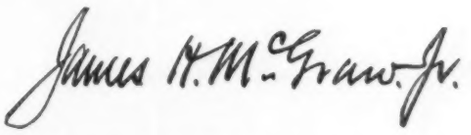
The board will keep close touch with industrial executives and technicians so as to keep abreast of new problems as they arise. It will maintain contact also with government objectives, plans and problems. Thus it will function as a link between the several governmental defense agencies and the McGraw-Hill editorial organization, and so help each editorial staff to develop a program best suited to the special problems of its industry.

* * * *

In thus undertaking our part in an extraordinary industrial effort, we shall not neglect the normal concerns of American industry. So far as may be consistent with the paramount needs of national defense, production and distribution of the goods and services normally consumed by the American people must go on. The effort to mobilize industry for the national defense must be, in large measure, an additional job and an added burden.

That burden is within the capacity of the American people. But it will not be light. And if industry is to carry successfully its heavy share of that burden, it needs the full cooperation of every industrial function.

For more than seventy-five years, through peace and war, McGraw-Hill publications have served to interpret between the various departments of industry and between industry and the American people. Today, as we face these new problems, there is a new and urgent need for interpretation between the industries we serve and the government to which we all bear allegiance. It is fitting that McGraw-Hill should undertake this effort. To it I pledge every resource of our organization.



President, McGraw-Hill Publishing Company, Inc.

This message is appearing in all McGraw-Hill industrial and business publications, reaching over a million readers.

NEWA at Del Monte

CHANGING trends in appliance merchandising, problems incident to the whirlwind development of fluorescent lighting, opportunities for more effective use of advertising, reports of the national Hot Springs convention and election of a new secretary occupied the three-day meeting of the Pacific Division, NEWA, held at the Hotel Del Monte, Calif., June 13-15.

R. A. Balzari, sales and marketing counselor, was elected secretary of the division, succeeding the late Albert H. Elliot, who had occupied the office since the division was organized in 1908. Balzari was formerly manager of the industrial department of Westinghouse in San Francisco. Later he was marketing counselor for the McGraw-Hill Publishing Co., in New York for 10 years. Since 1934 he has been on the Pacific Coast, serving until 1938 as president of the McGraw-Hill Co. of California, as well as operating his own independent sales and marketing consulting business.

At the two open meetings attention was directed at problems involving the wholesaler as well as other branches of the industry. R. G. Kenyon, advertising manager of the Southern California Edison Co., Los Angeles, pointed to the comparatively inadequate promotional job of the industry and emphasized the problems incident to selling electric service. Potential markets in which the wholesaler might profit providing the industry intensified its sales and advertising effort, he listed as domestic lighting, the 40% of non-refrigerator users, the electric roaster.

Inroads of butane or "bottled gas" on the range, water heater, refrigerator and wiring supply markets in all regions adjacent to petroleum-producing areas were outlined by H. H. Courtright, president, Valley Electrical Supply Co., Fresno. He stated that U.S. production of this product reached 250,000,000 gal. in 1939 and that approximately 20% was being used for domestic purposes. Upwards of 250,000 butane type gas ranges were sold in rural areas last year, he declared, as against 225,000 electric ranges. He decried the unregulated marketing practices of distributors and made a plea for industry solidarity in presenting a sales story to offset this new competition.

H. C. RICE

D. E. HARRIS

M. H. JANKELSON

Changing trends in the types of retail outlets responsible for the major volume of appliance sales were discussed by H. C. Rice, manager of domestic sales, Southern California Edison Co. He outlined reasons for the decline in the number of straight electrical dealers and placed some of the blame on the indifference and lack of close contact with the dealer and his problems. The trend away from the established and accepted channels of distribution can only be halted by better counsel and better service to the dealer, including some kind of a program to give his salesmen proper sales training.

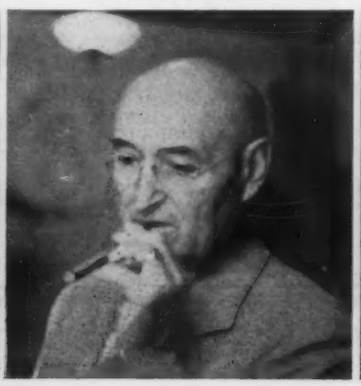
Latest developments in fluorescent lighting were presented by Sam Hazelton, Pacific district illuminating engineer, G-E Lamp Dept. What this new market means to the wholesaler in increased profit and margins were emphasized during the demonstrations he gave. In addition to possessing a 4 to 1 list price advantage over incandescent, this new type lighting offers opportunities to sell fixtures and auxiliaries which add to the wholesalers' volume. Despite this, the new light source has a wide customer appeal both from the efficiency and economy standpoint. Virtually all of the operating and production difficulties have been eliminated and several new types of tubes are in production, he stated. He emphasized what the Fluolier program of standardization and approval meant to the wholesaler in assurance of quality products.

A program feature which aroused much favorable comment was the Westinghouse talking color picture, "The Middleton Family at the World's Fair." In the golf tournament the Copper Cup was won by C. W. Goodwin, San Francisco, manager, G-E Supply Co.; the Manufacturers' Cup by Ray Murphy, Pacific Coast manager, Westinghouse Lamp Co. and the Clendinnin Trophy by W. G. Figroid, manager of the Gilson Electric Supply Co.

R. A. BALZARI

H. L. HARPER

ROSS HARTLEY



F. C. TODT

KIMBALL

WILEY

IAEI on a Boat Ride

WHETHER fun of the boat ride or seriousness of the National Electrical Code were primary, both purposes were adequately served during the joint boat ride and meeting of the Northern California and Greater Central Valley Chapters of the International Ass'n. of Electrical Inspectors and of the San Francisco Electrical Contractors Assn., June 14 and 15. The boat ride was on the river steamer Delta Queen from San Francisco to Sacramento and return. The joint meeting was held at the Sacramento Hotel.

The 1940 edition of the Code, its changes and its possible confusions, was the subject of the morning meeting. Ralph W. Wiley, chief of the department of electricity, San Francisco, warned the audience of 200 contractors, inspectors and manufacturers' representatives that the new code would be more complicated and involved than any previous code. He also pointed out by means of tables and charts that the introduction of small diameter wires would not give the added capacity first anticipated because the new tables of carrying capacities of conductors have reduced materially the allowable carrying capacity of conductors.

In explaining some of the possible difficulties because of the introduction of the factors of ambient temperature and voltage drop, Mr. Wiley said: "Yesterday, June 14, the temperature in Sacramento was 104 deg. F. or 40 deg. C. According to the new temperature correction tables, the carrying capacity of type R wire would be cut to 71 per cent or from 15 amp. (No. 14 gage) to 10.65 amp. If the temperature was taken in the attic which easily exceeds 122 deg. F. or 50 deg. C., the temperature correction table would not permit this type of conductor to be used. Therefore, theoretically according to the table, it would have zero capacity as far as the passage of current is concerned."

Feeder capacity was then discussed and Wiley pointed out that under 1940 Code rules, a basic reduction is made in the capacity of conductors and a further reduction is made if more than 3 conductors are run in a conduit with still further reductions for temperature corrections. He maintained that the Code does not take into account diversity factor. Experience has proved to inspectors, he said, that feeders operate at peak capacity only for fairly short intervals, if at all. "The experience of most electrical inspection departments regarding feeder failures seems to point to the fact that there have been very few due to overloading, that in most cases they are due to breakdown of the insulation caused by improper installation or improper support in the vertical runs."

Harold Gerber, chief inspector of the department, outlined a great many of the changes to be found in the new edition of the Code outside of the wire tables and feeder capacity rules.

The morning meeting was presided over by C. F. Donley, president of the Sacramento Electrical Contractors' Assn., and was welcomed by Clifford Prudhomme, Sacramento city electrical inspector. Entertainment and refreshments were furnished the visitors by a joint committee of inspectors, contractors and the electrical industry.

The afternoon session was presided over by Ben Hill, superintendent of electrical division of Oakland and chairman of the Northern California chapter IAEI. Arthur Schanuel, field representative, National Adequate Wiring Bureau, New York, told how the editors of women's magazines had been interested in furthering the cause of adequate wiring and how this fact could be helpful to contractors and the industry in local promotion.

A comedy stunt at the noon luncheon, kidding the "ambient temperatures", was presented presumably by Dr. Faren Heit of New Mexico, really W. A. Cyr, associate editor ELECTRICAL WEST.

Committees from contractors and inspectors responsible for the details of the joint meeting and boat ride were headed by Harold L. Gerber, secretary of the Southwestern section AIEI, with W. A. Cyr as secretary of the committee. Representing the contractors were Edward Dowd, Carl Severin and Gus Boracco of San Francisco; the inspectors Nick Siggins and Harry Romick of the San Francisco department of electricity. William Welsh, secretary, Sacramento Contractors' Assn., and Clifford Prudhomme were active on the arrangements at the Sacramento end.

HARKNESS DAHL

PRUDHOMME

and Sacramento Firemen's Band

PCEA Meets

Directors session held recently in Los Angeles

Windup of a successful administrative year under President W. W. Glosser and adoption of a program for the forthcoming year under President-elect C. E. Houston were effected at a PCEA directors' meeting in Los Angeles June 19. Reported were a 10% membership gain and an increasing all-industry interest in the association as demonstrated by the fact that 87 companies were represented among the 692 registrants at the recent Oakland convention.

New officers elected were S. E. Gates, General Electric Co., and K. M. Ryals, Stone-Ryals Electric & Mfg. Co., as vice-presidents. N. R. Sutherland, PG and E, was re-elected treasurer and R. E. Smith, So. Cal. Ed. Co., was elected to the directorate.

Six committees were discharged—the air conditioning, agricultural education, transportation, demand and diversity factors, industrial power handbook revision and agricultural power hand book revision committees all having completed their assignments.

President-elect Houston announced the following appointments for the 1940-41 administrative year:

Business Development Section Guidance Committee: R. C. McFadden, So. Cal. Ed. Co., chairman; E. G. Stahl, San Joaquin Power Div., PG and E, vice-chairman; H. D. Conklin, Edison G-E Appliance Co.; H. S. Schuler, Westinghouse; O. R. Doerr, PG and E; W. E. Carlson, G-E Lamp Dept.; W. P. L'Hommedieu, Westinghouse; P. P. Pine, San Diego Con. G. & E. Co.; C. H. Thrane, G-E Supply Corp.; H. C. Rice, So. Cal. Ed. Co. and W. E. Guy, Graybar.

Administrative Services Section Guidance Committee: E. A. Long, PG and E, chairman; S. W. Murray, Westinghouse Electric Supply Corp., vice-chairman; Charles Davies, San Diego Con. G. & E. Co.; Leonard S. Fryer, Graybar; L. C. Rausch, Coast Counties G. & E. Co.; F. C. McLaughlin, So. Cal. Ed. Co.; G. M. Richardson, Phelps-Dodge Copper Products Corp.; S. W. Scarfe, G-E Co.; William DeWaard, San Diego Con. G. & E. Co.; Ralph Walbridge, So. Cal. Ed. Co. and E. C. Wood, PG and E.

Operating Economics Section Guidance Committee: G. E. Bishop, Coast Counties G. & E. Co., chairman; A. D. Brown, Allis-Chalmers, vice-chairman; K. B. Ayres, San Diego Con. G. & E. Co.; Walter Smith, G-E Co.; A. W. Copley, Westinghouse; E. K. Sadler, Kelman Elec. Mfg. Co.; W. G. B. Euler, PG and E; H. W. Flye, Aluminum Co.; A. M. Bohnert, Ohio Brass Co.; E. W. Row, So. Cal. Ed. Co.

PCEB Committee: D. E. Harris, G-E Supply Corp., chairman.

Distribution Line Investment Costs Committee: S. J. Lisberger, PG and E, chairman.

Industry Information Committee: S. W. Scarfe, G-E Co., chairman.

Highway Lighting Committee: A. E. Holloway, San Diego Con. G. & E. Co., chairman. Technical sub-committee: G. H. P. Dellman, San Diego Con. G. & E. Co., chairman.

Petroleum Electrification Committee: L. S. Peterman, So. Cal. Ed. Co., chairman.

Standardized Services Committee: J. H. Penguilly, Square D Co., chairman.

Industrial Power and Heating Committee: G. N. Hawley, So. Cal. Ed. Co., chairman. Data Sheet Sub-committee: J. H. Corlett, G-E Co., chairman. Competitive Power Sub-committee: J. P. McElroy, PG and E, chairman. Welder Rating Sub-committee: H. G. Dillin, San Diego Con. G. & E. Co., chairman.

Meterman's Handbook Revision Committee: W. N. Lindblad, PG and E, chairman.

Safety Committee: Howard Miller, So. Cal. Ed. Co., chairman.

Purchasing and Stores Committee: William DeWaard, San Diego Con. G. & E. Co., chairman.

Women's Committee: Mrs. Eleanor Gemmell, PG and E, chairman.

Red Seal Adequate Wiring Committee: G. E. Zelhart, PG and E, chairman.

Ordinance Committee: C. E. Heise, Westinghouse, chairman.

Agenda

Western electrical groups check in recent activities

Various phases of the industry continue to be discussed in weekly luncheons or monthly gatherings of electrical men in the West. Here's the doings of many of these organizations:

AIEE—Seattle section—Met June 29 for inspection of East Side Tacoma Narrows Bridge conducted by bridge engineers and officials. Tacoma-Seattle shipbuilding plant was also inspected. Larry Wuerch is secretary of Tacoma Engineers Club which handled this event. A. I. Launder is secretary, Seattle section.

AIEE—Utah section—Held their annual dinner dance recently in Salt Lake City. More than 50 members and their wives attended. Officers for coming year were elected May 20. Obed C. Haycock was elected chairman; Harry H. Kreuger, vice-chairman and John A. McDonald, secretary. Lester E. Gamble, Spokane, vice-president of district 9, was principal speaker on election evening.

Electrical League of Utah—League members recently heard William F. Langton, field secretary of the Apartment House Assn. of Utah, speak on "Make Your Garden as Livable as Your House Through Lighting." On June 3, at a special luncheon meeting, Dr. George W. Allison, Modern Kitchen Bureau, spoke on "Electrical Trends in Home Construction." A Board of Trustees meeting was held June 12, with the annual League Outing scheduled for Aug. 14 at Lagoon.

Electric Club of Washington—Annual golf tournament was held June 3. On June 10, Pilot Felix Jones, United Air Lines, spoke on "Radio Highways of the Air." Club has adjourned until September, 1940.

IAEI, Southern California chapter, southwestern section—Met in Long Beach recently to discuss inspector problems. Annual convention is to be held at Santa Barbara Aug. 26-28.

IAEI Central California Chapter—Annual elections re-elected C. T. Coyle, electrical inspector, Fresno, chairman; D. A. Demanty, electrical inspector, Lindsay, vice chairman; J. R. Lazarus, Pacific Coast Electrical Assn., secretary-treasurer; on executive committee Glenn Johnson, electrical inspector, Delano; H. S. Walling, Square D Co., Fresno. Next meeting will be held in Fresno in November.

IES — Southern California section — Met June 11 to hear John T. Shannon, manager Keese Engineering Co. whose subject was "Commercial Application of Ultra Violet Radiation."

L. A. Electric Elects

New President of the Los Angeles Electric Club for 1940-41 is Wm. E. Cranston, Jr., vice-president and general manager, Thermador Electrical Mfg. Co. Elected June 3, and installed June 17, Cranston will have as fellow officers: J. H. Pengilly, first vice-president, vice-president Square D Co.; A. D. Brown, second vice-president, district manager, Allis-Chalmers Mfg. Co.; Charles P. Garman, third vice-president, assistant engineer of design, Bureau of Power & Light; J. A. Long, secretary-treasurer, assistant credit manager, Southern California Edison Co.; and John A. Duncan, sergeant-at-arms, manager supply dept., Westinghouse Electric Supply Co.

Making the total membership of the board number eleven are the five general members of the executive committee: W. R. Dressler, special representative, Southern California Telephone Co.; F. E. Geibel, superintendent of equipment, Pacific Electric Railway Co.; S. F. Hill, Hill Electric Co.; H. W. Tice, assistant manager of operation, Southern California Edison Co.; and C. H. Thrane, sales manager, General Electric Supply Co., ex-officio.

ANNUAL 49'er STAG of the Los Angeles Electric Club usually brings out the Old West (and the worst) in club members. Head of this year's affair was H. W. Tice, Southern California Edison (left), with E. F. Gould, chairman, games and equipment, being held up by A. H. Howard

SQUARE D MOTOR CONTROL

reduces maintenance cost!

"OUR IDEA of the way to start a program of inspecting and maintaining electrical control equipment most economically is to select types of equipment that require a minimum of maintenance, and then install this equipment in such fashion that possibilities of trouble will be minimized. With a plant thus equipped the inspection and maintenance job is greatly simplified."

—From an article in April Factory Management & Maintenance *by Mr. C. E. Armstrong, plant engineer of the Caterpillar Tractor Co.*

At right: Photograph taken in the "Caterpillar" plant in Peoria, Illinois, showing efficient, convenient installation of Square D automatic starters.

● **Apparatus which is easy to inspect receives better maintenance care at substantially lower cost. That is why Square D engineers consider maximum accessibility of all parts a "must" in the designing of motor control. All renewable parts can be inspected or replaced with a minimum of time and labor. Contacts, springs and magnet coils can be removed from Square D starters without disturbing any of the line or load connections.**

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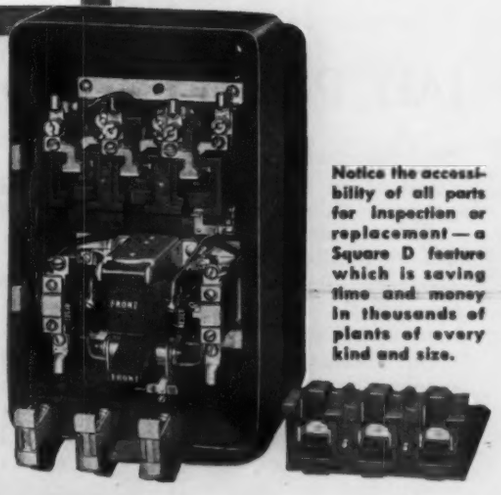

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Plan Adopted

Wiring in rural areas to be inspected in Washington

All wiring in rural areas of Washington will be inspected by a state inspector prior to connection by a utility under a plan for projected legislation adopted recently by the Washington Electrical Contractors Assn. The WECA meeting, held in Yakima, drew a large representative attendance from all areas of the state.

The plan, as presented by WECA's executive committee, would provide revenue sufficient to enable the state's Dept. of Labor and Industries to maintain a staff large enough to give direct inspection in outlying areas. Because of a lack of man-power, the department's electrical inspection work is now understood to be going behind several thousand inspections each year.

Elimination of safety hazards would be a paramount objective of the plan, it is pointed out by leaders in the contractors' group. Increasing electrification throughout the state makes it highly desirable that wiring be of a standard to meet accepted safety requirements, they emphasize.

F. L. Van Slyke, of Puyallup, was re-elected president of WECA at the session. Other officers chosen were: Frank Walsh, Wenatchee, vice-president; E. M. Honnold, Orting, secretary-treasurer, and G. A. Estep, Yakima, as district committeeman on the executive committee to succeed George Picatti. Other members of the executive committee include Harry A. Smith, Spokane; T. J. Bell, La Crosse; F. E. Smallidge, Wenatchee; Byron Bryne, Sedro Woolley; George F. Fauver, Everett; J. H. Post, Olympia, and Jos. T. Krivanek, Longview.

IAEI Program

Entertainment plans for Montana convention in September set

Entertainment program for the Northwestern Section International Assn., of Electrical Inspectors' convention at Great Falls, Montana, Sept. 3-6 has been tentatively set.

On Tuesday, opening day, a sightseeing tour will be made during the afternoon to include the Black Eagle generating station, Anaconda Copper Mining Co. copper and zinc reduction works and the Anaconda Wire and Cable Co. wire and rod mill. That evening informal entertainment including a visit to the C. M. Russell, cowboy artist, exhibit will be furnished.

Wednesday afternoon will consist of a trip to Rainbow, Volta power plant of Montana Power Company followed by a picnic, dance and colorful Indian ceremony at the recreation center, Volta power house.

Thursday evening will be the annual dinner and dance at the Rainbow Hotel. Women's entertainment includes the luncheon and bridge on Tuesday, a shopping and theatre party on Thursday. The annual golf tournament will be held at the private course of the Anaconda Copper Mining Co. on Tuesday afternoon.

New League

Western electrical men assist in its formation in South Dakota

Electrical interests of the Black Hill section of South Dakota, from Bellefouche on the north to Hot Springs on the south, gathered together in the Rapid City municipal auditorium, May 15, for the purpose of laying plans for the creation and organization of an electrical league.

A turnout of 175, including a well-balanced group of contractors, dealers, wholesalers, electricians and utility men heard plans for the proposed organization by Neil Simpson, Dakota Power Co., and Marion M. Wilson, electrical inspector of Rapid City, co-originators of the movement.

Other speakers were Austin W. Dunham, Anaconda Wire & Cable Co., Denver; Les Johnson of General Electric's Salt Lake City district office and chairman of the Electrical League of Utah's Adequate Wiring committee; and George W. Lewis, executive secretary of the Rocky Mountain Electrical League.

Dunham discussed proposed changes in conductor ratings in the 1940 wiring code and new types of wiring; Johnson explained the National Certified Wiring Plan and urged creation of an electrical organization to handle details of the plan. Lewis spoke on league organization.

Industry men of the area are optimistic about the idea and are looking forward to its actual establishment in the near future.

● H. M. POMEROY of J. G. Pomeroy Co., Los Angeles has announced the formation of a Bureau of Lighting Information. This bureau has been organized to assist the architect, engineer, contractor or purchasing agent in supplying them with information covering recommendations as to the most suitable equipment for the job—where it can be obtained and its cost. This bureau is interested in securing catalogs and other data from all manufacturers of lighting equipment.

Speaker Bureau

Association inaugurates program service for electrical meetings

So as to provide an index of speakers and subjects for all types of electrical industry meetings, the PCEA Industry Information Committee under the chairmanship of Richard E. Smith, has inaugurated a program service for the use of program chairmen and officers of all groups affiliated with the industry in the territory covered by the association. Just issued is a publication listing 70 speakers and a wide variety of electrical subjects, all of which are available for industry meetings.

Purpose of the undertaking is explained in the foreword: "The object of the Industry Information Committee is to devise methods whereby men and women earning their living *in* the electrical industry can learn more *about* the industry. Every employee in this industry belongs—or should belong—to some small intimate group holding regular meetings to learn more about this great business which moves so rapidly that, literally, new things and new ideas are coming out every day. The key to a successful meeting is a good program.

"Here is a list of men and women who are qualified to present some phase of the electrical industry in an informative and interesting fashion. There is also a list of motion pictures and illustrated addresses. First comes a complete list of speakers arranged alphabetically, giving their location and the general type of subjects in which they specialize. In another section they are listed geographically."

Arrangements for the speakers listed will be handled through either the Los Angeles or San Francisco office PCEA.

Contractors Organize

A new contractors' organization has been formed in Montana headed by A. E. Nicolus of Billings, Mont., a president. Known as the Electrical Contractors' Assn. of Montana, other officers are Dan Goggins of Great Falls and Oscar Walford, secretary-treasurer, of Missoula.

Preliminary meetings have been held to determine qualifications for membership. A large statewide meeting is planned this spring to plan cooperation with the utility in its load-building and lighting programs and to assist in entertaining the Inspectors' convention at Great Falls in September. The officers were guest speakers at the recent series of meetings held in Montana at which the power company's program for the year was outlined.

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NEWS OF THE INDUSTRY

SCRUGHAM BILL PASSED BY THE HOUSE

Revision of power and interest charges at Boulder Dam, placing the great power plant on an amortization rather than a competitive basis, was approved last month by the House.

With hardly a murmur of dissent, the Scrugham bill, after three years of discouraging reverses in Congress, was passed by a voice vote under a suspension of the rules.

Reduction of interest from 4 to approximately 3 per cent, operation of the dam by the Los Angeles Bureau of Power & Light and the Southern California Edison Co., as operating agencies for the Federal government, and deferment of repayment of a $25,000,000 flood control item until after the 50-year amortization period is ended are provided in the legislation. A Senate amendment applying the prevailing rate of wages to laborers directly connected with the operation and maintenance of the project was agreed to.

Reassurance that the government will be repaid "lock, stock and barrel" for the costs of the $215,000,000 hydroelectric plant was given by Representative Scrugham, Nev., author of the bill. Scrugham, who opened the 20-minute debate, declared that an immediate change to an amortization basis was necessary, since a decrease in fuel oil costs would result in loss to the government under the present competitive system.

The only objection to the measure was voiced by Representative Mundt, South Dakota, who did not oppose the bill but stated that it was a "dangerous manifestation" of power policies inaugurated by the New Deal. These policies, Mundt said, are "beginning to bear harvest in legislation of this type."

Three California House members—Representatives Leland M. Ford of Santa Monica, Thomas F. Ford of Los Angeles and Hinshaw of Pasadena—urged favorable consideration of the bill while former opponents of the measure, including Representative Horton, Wyoming, O'Connor, Montana, and Murdock, Utah, praised it as "meritorious."

Although 40 minutes were granted for debate on the bill, less than 20 minutes were needed to convince the House that the legislation should be passed. Expected opposition from Republican members of the House Irrigation Committee failed to develop.

The measure was sent to the Senate, where speedy action is anticipated. A Senate bill, on which hearings were held by the Senate Irrigation Committee last month, may be substituted for the House bill but little difficulty is expected in reconciling the two measures.

★ Development of the Colorado River was undertaken before the Federal government became "liberal" in its financing of multi-purpose projects. Not a shovelfull of earth was turned until contracts were signed which guaranteed full repayment of the cost to the U. S. taxpayers plus amounts in lieu of taxes to Arizona and Nevada. Without Federal subsidies such as later projects enjoyed, Boulder Dam power was not competitive. This new legislation meets "competition."

TIN STOMACH DIET

Since the collegiate craze for a diet of assorted live goldfish, angleworms, lizards, baby mice and crickets died away, there has been little in the way of dietary oddities reported. Now A. V. Thompson of the G.G.I.E. staff on Treasure Island, reports a new dietetic specialty — burned out light globes. Here is the gist of a telephone conversation in which he participated:

"This is Ripley's Oddities over on the Gayway," said a voice over Tommy's phone. "Where can we get some burned out light bulbs for Zorita?"

"Who in h—l is Zorita?" was the Thompson comeback.

"Oh, you know her," replied the voice, "she eats light bulbs in Ripley's show."

"Yeah, and how about the respective palatability," said Thompson, certain that he was being ribbed. "Does she prefer clear or inside-frosted globes?"

"That don't make no difference to her just so long as they aren't bigger than the 100-watt size," answered the voice. "Bigger than that they are too hard to get your teeth into."

If Zorita's taste can be extended to others, maybe here is a market for salvage.

MODESTO DISTRICT BUYS PG AND E PROPERTIES

Formal approval of the California Railroad Commission remained last month to make the Modesto Irrigation District the sole distributor of electrical power in the territory which the district has been serving for 16 years in competition with the Pacific Gas and Electric Co.

Two years of negotiations ended when the district agreed to purchase the company's distribution properties within the district's boundaries for $325,000.

In consideration of this price, the company agreed to withdraw completely from the territory, and the district will drop condemnation proceedings which have been pending in the courts since January, 1933.

The district has agreed to purchase from the PG and E all the power it needs for the territory in addition to the power generated by its own plant on the Tuolumne River.

The district also has agreed not to attempt to serve any territory outside of the area which it now serves.

The Railroad Commission, several years ago, fixed a valuation of $222,000 on the company's distribution properties in operation at that time. The company refused to accept this valuation and the matter shortly thereafter was taken to the courts, where it is still pending.

The company said the district "eventually approached the company with a proposal to purchase all its competing properties on the basis of a mutual agreement to be reached out of court."

Negotiations involving frequent conferences and careful studies by engineers and accountants for two years were concluded with the contract of purchase.

The company will retain only its main transmission and communication lines within the district's territory "for the benefit of its service to the district and adjacent territory."

Officials of the company here said they could not state when the matter will be submitted to the State Railroad Commission to complete the transaction. They expressed the belief, however, it will be as soon as the necessary papers can be prepared. The commission will set a date for a public hearing.

★ Thus ends a competitive situation which has existed for 16 years. Now Imperial Valley is the sole remaining California district in which competing utilities vie for business.

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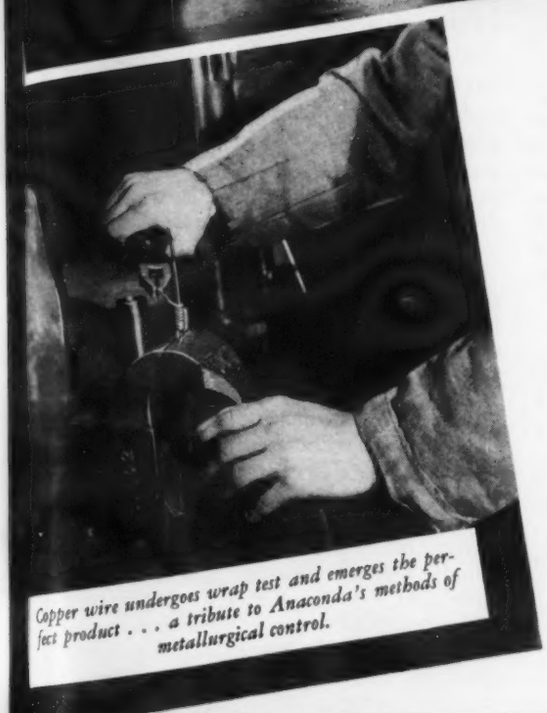

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Wash. PUD Commissioners Hear Dr. Raver

Bonneville Administrator Paul J. Raver said last month "Bonneville will aid in every way possible within its authority in assisting the public utility districts to acquire existing utility properties."

He told the Washington Assn. of Public Utility District Commissioners that after his first field trip he was "convinced that one of the nation's most outstanding public ownership developments could well occur in the state of Washington."

"The problem was, and still is, that of finding ways and means to effect a transition from private ownership to public ownership in a manner fair to the consumers and to the investors."

Any plans for acquisition of facilities are "doomed to failure" unless they have "the united and unqualified support of every district concerned," he added, referring to negotiations for purchase of the Puget Sound Power & Light Co.

The Bonneville Power Administration, Dr. Raver declared, "has not heretofore recommended or approved, and does not now recommend or approve, any particular plan of acquisition procedure sponsored by any group."

"Bonneville is interested not only in the fee arrangements to be included in the acquisition plan, but also in the lowest cost financing that can be obtained. Every effort should be made to avoid costly financing which would result in a higher overall cost of electricity to the ultimate consumer," he said.

Cautious on RFC

He warned the commissioners not to be "unduly optimistic as to the availability of public financing through a federal agency such as RFC."

"It is my understanding that RFC can and will participate in the financing of individual public utility districts where they are soundly organized," he said. "However, we are not sure what position RFC will take in a system-wide acquisition such as is contemplated in the Puget Sound area."

Boneville is adding an acquisition unit to its consulting staff which "will be available" if commissioners "care to use" it. A financial consultant formerly associated with RFC will be a member of the staff, he said.

Hartline Named

Oliver Hartline of Yelm was re-elected president of the utility commissioners, who went on record as favoring a federal investigation of the sponsorship of Initiative 139.

The resolution also requested the investigation go into the means by which that measure is advanced. It proposes a vote of the people before districts can issue bonds.

Other officers elected are: Chauncey Price, Carson, vice president; M. M. Moore, Ilwaco, secretary-treasurer.

Directors: Preston Royer, Alpha; Charles A. Pedersen, Bellingham; Frank Lindblad, Hartline, and Chester A. Bunday, Wenatchee.

★ Bonneville's latest step is aimed at curbing the so-called "racket" of selling legal, engineering and financial services to Washington PUD's.

San Francisco Gets Aug. 1 Stay on Hetch Hetchy

Federal Judge Roche paved the way last month for the city of San Francisco to enter negotiations with Pacific Gas and Electric Co. for a new lease agreement covering disposal of Hetch Hetchy power by granting a stay of injunction until Aug. 1.

That date coincides with the one agreed upon by Secretary of Interior Ickes at the request of two San Francisco delegations.

Judge Roche made the stay legal and official in Sacramento, where he is sitting temporarily, and at the direct request of U. S. District Attorney Hennessy, City Attorney O'Toole and Assistant City Attorney Dion Holm.

City Attorney O'Toole and Utilities Manager Cahill now are expected to initiate conferences with President James B. Black of PG and E toward a new lease arrangement.

In the event a leasing arrangement can be achieved which will satisfy Secretary Ickes, the problem will have been overcome, but if not, it appeared last month that the city will have to seek a charter amendment and submit a new municipal power distribution system bond issue to the voters.

The attitude of Secretary Ickes in this matter was re-emphasized in a formal report to the Board of Supervisors by Supervisors Shannon and McGowan, who, with O'Toole and Cahill, constituted the city's official delegation to Washington.

The committee concluded, the report said, "that San Francisco must without delay, endeavor to enter into such leasing agreement and that if we cannot satisfactorily do so, we must immediately place upon the ballot a power bond issue and use our every effort to bring it to a successful conclusion."

★ Meanwhile the feeling grows that San Francisco's simplest and easiest solution to its Hetch Hetchy dilemma is amendment of the Raker Act to legalize sale of its by-product power to PG and E—a feeling not shared by Secretary Ickes.

Seattle City Light Reduces Rates; $200,000 Saving

The Seattle city council has passed an ordinance reducing City Light rates for residence current, effective July 15, and declared to be a saving of $200,000 a year to customers. Superintendent E. R. Hoffman declares the rate cut is "another contribution to electrical home modernization—out of the fruits of our success and your co-operation."

All residential customers of City Light will benefit, but the greatest savings will be available to users of electric ranges and automatic storage tank water heaters, Superintendent Hoffman states. Over 38,000 electric ranges are now on City Light lines. A feature of the new rate reductions, which are declared to bring the Seattle rates among the three lowest in America, is the "all-electric" rate giving 370 kw.-hr. per month for $5, with each additional kw.-hr. at the new low of 7 mills per kw.-hr. The rate applies to homes using the electric range and storage tank-type water heater, and is expected to result in an increased demand for such equipment. City Light officials report that such savings to customers will result in several dollars a month. New low standard rates start at 3½c per kw.-hr., compared with 4½c previously in effect for the first block. The first 50 kw.-hr. at 3½c; next 40 kw.-hr. at 2½c; next 100 kw.-hr. at 2c; all over 190 kw.-hr. at ¾c; 500 kw.-hr. for $5.91.

★ Another reduction added to the long list of those passed along to Western residential customers in many communities in 1940. Unless signs are wrong, more are in the offing. Hearings are underway in PG and E territory. Rumor has it that one municipality in the Northwest will announce the "lowest domestic rates in the U. S." before the year's end. All this means stimulus to the appliance business, which already is booming at record highs.

● KILOWATT HOURS delivered to Seattle City Light customers during the 12-month period ending April 30 increased 15.28 per cent over the same period a year ago, according to a report filed with Mayor Arthur B. Langlie and the Seattle city council by Arthur O. Olsen, chief City Light accountant. Olsen's report showed operating revenues of $6,123,311 for the year, an increase of $145,830. Merchandise sales increased 7.39 per cent in the same period, while ranges on the line reached the all-time high of 38,150. Lighting Superintendent E. R. Hoffman predicts further increases in output and revenues will follow the City Light rate cut effective July 15.

Pacific Power Signs Bonneville Contract

A cooperative step between the Bonneville Administration and the private utility companies operating in the Pacific Northwest is the contract just executed between Bonneville and Pacific Power & Light Co. for the purchase by the company of 1,500 kw. of Bonneville power for its Astoria, Ore., district. The district is now served from a steam plant of 8,000 kw. capacity. The contract, which is designed to provide capacity for an increasing load in the district, will become effective about March 1941 on completion of the projected Bonneville 110,000 volt transmission line to be constructed from the St. Johns Substation to a point in the vicinity of Astoria.

The contract is to run for one year. It contains no agreement as to re-sale rate schedules, but in a statement accompanying the announcement of the contract, Paul B. McKee, president of the company, reiterated his intention to pass on to ultimate consumers any saving effected through the purchase of Bonneville power. Both parties to the contract agreed to undertake studies with a view to determining what re-sale rate schedules would be appropriate should a more permanent power contract be eventually agreed upon.

Under the contract, the Pacific company agrees to transfer Bonneville power over its Astoria district facilities to the Nehalem Valley cooperative and the Wickiup PUD both lying adjacent to the area now served, at such time as these two public bodies have acquired distribution facilities.

Also included in the contract is a further cooperative provision under which Pacific company agrees to transfer Bonneville power over its facilities in Klickitat County, Wash., to the Klickitat PUD until such time as Bonneville has completed its own transmission line into this area.

★ This is the kind of cooperation with Bonneville that private utilities have been advocating. Full significance of the contract is discussed in the editorial comment on page 46 of this issue.

Ellensburg, Wash., Sets New Low Rate Schedule

The city of Ellensburg, Wash., announces that new rate schedules for light and power furnished by the municipal plant will become effective Aug. 1, providing average reductions of betweeen 35 and 40 per cent, totaling about $55,000 a year. The most drastic cut ever made by the city drops the rate for residential lighting from $3.50 for the first 100 kw. to $2.50. The average cut in residence lighting, including the schedule for small users, runs about 20 per cent. For residential service, the new rate starts at 4c for the first 50 kw.-hr.; 2 cents for next 50; 1 cent for the next 200 and ¾c for all over 300.

The commercial light and power rates provide for savings, in some cases, up to 50 per cent; 3c for the first 150 kw.-hr.; 2c for next 350; 1c for next 1,500; .8c for next 13,500; .6c for next 25,000 and .5c for all over 40,500. Under the old rates, commercial rates started at 5 cents for the first 60 kw. and did not drop below one cent.

The city has notified the Puget Sound Power & Light Co. that June 27 is the deadline for submission of a new power contract. The company had asked for postponement of negotiations until July 31, while the Bonneville Administration put a June 30 deadline on its offer.

In 1930, before the first of the four cuts in rates made in the past decade, residential rates started at nine cents, and commercial rates at eight cents.

Utah Power Gives Appliance Business to Independents

In the avowed interest of quickened "industrial mobilization under the national defense program," the Utah Power and Light Co. is relinquishing to independent dealers its business in electrical appliances.

Hereafter, the personnel will concentrate its energies upon providing electric service for industries, commercial establishments, home and farms of the area it serves. Company outlets will handle only lamps and small items for customers' convenience.

"The emergency preparedness program will require speeding up of industrial mobilization to support our national defense forces," said George M. Gadsby, president-general manager of the utility.

"In the Intermountain area the demands for non-ferrous metals for materials used in industry to expedite rearmament will be increased. In all of these emergency preparedness conditions electric power plays an important part.

"It is necessary in meeting production requirements that there be an adequate and dependable supply of power so as to meet emergencies and anticipate future needs. To accomplish this objective will require financial resources as well as the time and energy of each trained, experienced executive and key man in our organization. For that reason none of them will be able to find time properly to direct large merchandising activities."

Gadsby said he was confident increased business accruing to independent dealers as a result of the company's shift in policy would provide employment opportunities for such members of the staff as will be affected.

★ Utah Power & Light's retirement from merchandising will bring mixed reactions in the industry. Dealer cooperation will probably be intensified to assist these independent outlets to pick up the full load. Principal question is "Does this indicate a trend to be followed by other Electric Bond and Share properties?" Only time will tell.

● Pacific Power & Light Co. have purchased the Knappa Svenson Co. of Astoria, Ore. This company, owning 42 miles of line running along the Columbia River east of Astoria and serving 340 customers, has been in operation since 1927. Pacific Power & Light Co. has been selling it power wholesale. Pacific Power declared that it would immediately put its Astoria rates into effect, which means that two-thirds of the Knappa Svenson customers will receive a 30 to 40 per cent reduction in rates while the other third will be reduced 10 to 11 per cent.

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Coffin Award Goes to Washington Water Power

The Washington Water Power Co. last month was awarded the electric light and power industry's most honored symbol of accomplishment, the Charles A. Coffin Medal.

The award, established in 1922 by the General Electric Co. as a tribute to the memory of the late Charles A. Coffin, founder of that company and one of the great leaders of the electric industry, is given annually to "the competing company which has achieved the greatest advancement in its operations and physical plant, thereby making a distinguished contribution to the development of the electric light and power industry for the convenience of the public and the benefit of the industry."

A gold medal and a purse of $1,000 for the winning company's employment benefit fund constitutes the award. In commenting on the award, it was stated that the company carried out in 1939 a remarkably successful and well coordinated sales program which resulted in large sales of electrical merchandise and increases in electricity sales. Merchandise sales for the year averaged about $55 per residence customers, 90 percent of the sales having been made by dealers.

The company's sales of electricity reached a total of 2,060 kw-hr. per residence customer per annum, and 8,750 kw-hr. per retail commercial customer. Annual revenues per customer and net income of the company also were increased, notwithstanding continued rate reductions during the year.

The company was markedly successful in new financing and refunding operations.

Another achievement noted in the citation was the plan, formulated under the lead of the Washington Water Power Co. for the cooperative marketing of the output of the Bonneville project, "which if adopted would avoid the wasteful expenditure of $60,000,000 in duplicate transmission facilities." Kinsey M. Robinson, president of the winning company, was president of the Idaho Power Co. when that company won the Coffin Award for 1935.

Utah Power Best Report

The Utah Power & Light Co., Salt Lake City, Utah, has won first prize among power and light companies in a nationwide contest sponsored by Reddy Kilowatt for the best illustrated and most humanized annual report published for the year 1939.

This contest was judged by Merryle Stanley Rukeyser, New York, economic commentator and well-known authority on financial reports, who stated:

"I award the plaque to the Utah Power & Light Co. for its annual report for 1939, which has combined simplicity of language with a highly interesting presentation of ideas through the use of Reddy Kilowatt and other cartoon symbols. This company has also used modern concepts for simplifying, streamlining and shortening its income statement."

Kinsey M. Robinson, president, Washington Water Power Co., with his vice-president and general manager, J. E. Royer (left), examine trophy presented to his company for winning Modern Kitchen Bureau award. J. R. Poteat, chairman, NEMA, holds the handsome prize

Bankers Told of Low-Cost Power at Bonneville

Opportunities for new and greater diversity in Northwest manufactures, through use of low-cost hydro power, should prove of great benefit to private capital looking for sound investment, Ivan Bloch, Bonneville Power Administration market development chief, told the annual meeting of Pacific Northwest investment bankers at Spokane last month.

Bloch stressed the impetus offered electro-chemical and electro-metallurgical industries as the result of Bonneville's lowest wholesale rate in America and the nation's new national defense program.

He told the bankers that without new industrial developments in the region both their sources of capital and their opportunities to invest it were in danger of drying up.

"Three out of ten people in the Northwest are directly and indirectly dependent on the forest products industries for their income," he declared. "Four out of ten people depend similarly on agriculture.

"At the present rate of forest depletion through cutting, fire and disease, within 20 or 30 years many people may face the loss of their incomes. At the same time, we cannot ignore that the fertility of the land is being sapped. We need to diversify our income-producing activities in addition to making more secure those we already have."

As a partial solution to the problem, Bloch pointed to the recent rapid expansion of the nation's electro-chemical and metallurgical industries and the need of those industries for more hydro-electric power.

Washington Gas and Electric Declares Rate Cut

The Washington Gas & Electric Co., operating in Longview, Wash. and vicinity, early in June declared a power rate reduction which will, it is stated, produce an annual customer saving of $50,000. Effective July 1, residential users will pay first 40 kw.-hr., 4½ cents; next 100, 2½ cents; next 100, 2 cents; and all excess kw.-hr., 1 cent. Monthly minimum will be $1.

In addition, the low water heating rate of eight mills per kw.-hr. will be in force. The new commercial rates will be: first 40 kw.-hr., 4½ cents; next 60, 3½ cents; next 900, 3 cents; next 4,000, 2½ cents; all excess, 2 cents.

The company's present residential rates are: first 40 kw.-hr., 5 cents; next 100, 3 cents; next 100, 2 cents and all in excess, 1 cent.

Nims Appointed Utah Power Military Laison Officer

L. W. "Cap" Nims, veteran electric utility executive, has been named special military and industrial mobilization liaison officer for the Utah Power & Light Co., according to company officials.

Nims will have complete charge of directing the company's activities so as to provide ample supply of electric power for war industries, to render assistance to the military forces, to civic leaders in their defense problems, and to business organizations in adjusting and increasing production for rearmament needs.

NIMS

More than 30 years ago, Nims started his electric utility career as chief power dispatcher for the Utah Light & Railway Co. in Salt Lake City. Successively he was dispatcher, traveling maintenance engineer, then superintendent of the Rexburg division of the Utah Power & Light Co. In 1925 he became division manager at Rexburg, was transferred to Provo, Utah in 1927 and to Ogden in 1930 as manager of the Ogden division, which position he has held until his present advancement.

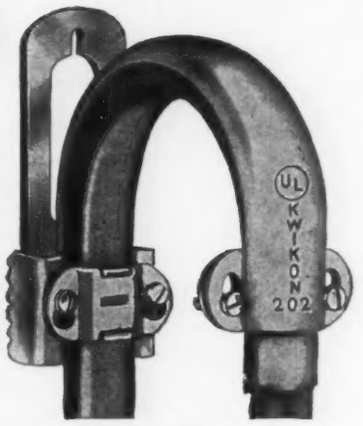
Nims entered the United States military service in May 1916 and served with the 316th engineers, 91st division in action overseas in France and Belgium. In 1919 he was commissioned lieutenant-colonel, inactive reserve.

★ This is indicative of steps being taken by Western utilities to insure full coordination with the national defense program. Currently active programs are under way in all sections to counteract and prevent possible acts of sabotage. On national defense surveys show that there will be no power shortages in the Far West.

Hook Up With
KWIKON No. 202
Service Cable Head

For the most economical, approved method of service cable installation

only 20c each
in lots of 50 or more



This most effective means of service cable installation is now made even faster and easier by the new hanger-type back. And, our constantly growing number of users makes it possible for us to pass along this improvement at no increase in price.

Approved by Underwriters' Laboratories, Inc.

KWIKON CO. 626 W. JACKSON CHICAGO, ILLINOIS

Aerial Surveys Undertaken By Idaho and Utah Power

Aerial surveys of transmission line routes to interconnect the Utah-Idaho electric power systems with those of Montana, Washingon and Oregon into one giant Northwest power grid have been started by the Utah Power & Light Co. and the Idaho Power Co.

Purpose of the new line will not be to replace power resources in Utah and Idaho, but to strengthen the entire northwestern grid system as a part of the national preparedness program.

Fairchild Aerial Surveys, Inc., has been awarded the contract for flying the proposed transmission line routes with engineers of the Utah, Idaho and Montana power companies. Aerial photographs will be taken and the most feasible routing determined for later ground reconnaissance and location surveys.

Private power companies of Oregon, Washington and Montana are already interconnected in a strong integrated system of large capacity with many plants at widely scattered points feeding into the pool. According to Geo. M. Gadsby, president and manager of the Utah utility, the plan now under consideration for interconnecting the Utah-Idaho systems with the Northwest Grid will add the plants now operated by the Idaho Power and Utah Power and Light companies in Utah and Idaho.

H. H. Krueger, power superintendent, Utah Power & Light Co., is conferring with officials of the Westinghouse Electric & Mfg. Company in Pittsburgh, regarding the type of line to be built and other important laboratory studies.

Electrical League of Utah Names Trade Relations Groups

Appointment of a "Trade Relations Committee," to bring about closer cooperation and the general building up of good will between the various branches of the electrical industry of the Intermountain area, was effected by the Board of Trustees of the Electrical League of Utah.

The five-man committee, consisting of one each from the various League branches, is made up of J. Vernon Sharp, chairman, who represents contractors; G. Wayne Stillman, representing dealers; E. J. Duggan, wholesalers; B. C. J. Wheatlake, representing manufacturers and W. A. Huckins, representing the utilities. Formation of the committee comes after months of study made by the Board and by E. J. Duggan, its originator.

Seattle Plans To Observe Electrical Safety Week

Plans, originating in Seattle, for observance of a national electrical safety week are progressing rapidly, according to Capt. Stephen E. Sanislo, safety educational director of the Seattle fire department and public relations chairman of the Northwestern section of the International Assn. of Electrical Inspectors, who suggested the idea recently.

He received a letter from Ralph W. Wiley of San Francisco, chairman of the International Electrical Safety Week committee, saying that setting aside of such a week has been requested of President Roosevelt and that Postmaster James A. Farley has been asked to have issued a special stamp commemorating the observance.

"Electrical safety is important at all times, but especially during the summer season when so many persons are going to their cabins and camps," Captain Sanislo said.

"When you open up your camp for the summer, inspect the electrical wiring, connections, outlets, and so on, to be sure they are in safe and serviceable condition. Make any needed repairs at once. This may save inconvenience and danger later on."

Standard Gas & Electric To Sell Western Utilities

Standard Gas & Electric Co., Inc., New York, has issued a prepared statement to its stockholders informing them of a proposal of compliance with integration provisions of the Public Utility Holding Company Act of 1935. Filed with the Securities and Exchange Commission on March 6, 1940, this proposal states that four western utilities under Group A in the report will be disposed of in a manner which will substantially reduce the company's debt.

The San Diego Consolidated Gas & Electric Co., The California-Oregon Power Co., Mountain States Power Co. and the Southern Colorado Power Co. figure in this stock transaction.

Other utilities throughout the United States also figure in this disposal sale.

Arizona General Utilities Signs Power Contract

A contract was signed last month with the Arizona General Utilities Co. whereby the company will supply power for the Graham unit of the Cochise-Graham rural electrification project, according to M. M. Bennett, construction superintendent.

Contract calls for furnishing of power at the rate of 1½c per kw.-hr. for the first 50 hrs.; 1½c for the next 50 hrs.; 1c per kw.-hr. for the next 100 hrs.; and nine mills per kw.-hr. thereafter.

The contract was deemed advisable pending the determination of the feasibility of obtaining Boulder Dam power through Coolidge Dam, and also pending the settlement of the controversy between upper and lower water users of the Gila River regarding pumping in Safford Valley.

Seattle Rates Compared to Other Large Cities

Seattle's double investment and maintenance costs are to blame for the city's inability to reduce light rates as rapidly as other parts of the nation, J. C. Unger, light rate statistician, declared last month. In a study on comparative light rates in the higher current-consumption field, Unger cited figures for 100 kw.-hrs. and data relative to towns and cities of 250 population or more.

He explained that most of the cities and towns in 1915 were charging from two to three times as much as Seattle for 100 kw.-hrs. of residential current. Only one city of any size in the nation, Tacoma, charged the same or less than Seattle for any amount of residential current.

In 1935, from among 17,000 cities surveyed, only 149 charged less than Seattle, while nine others charged exactly the same. In January 1939, from among a Federal power listing of 20,292 cities and towns, 251 charged less than Seattle, while 315 charged the same. And from among the nation's 191 larger cities, 25 charged less than Seattle, while five others charged exactly the same.

Puget Sound Employees Form First Aid Groups

More than 600 Puget Sound Power & Light employees last month enrolled in Red Cross first aid classes, Gen. H. G. Winsor, personnel officer, declared. Among those enrolled were engineers, surveyors, inspectors, service, line and metermen, and other employees.

R. S. Maxwell is chief safety inspector; H. R. McDonald first aid instructor, who is supervising the work, and the other instructors are all Red Cross trained who attended Red Cross summer institutes.

In addition to these first aid classes, Puget Sound is also putting 70 mobile units into service. These Red Cross mobile units are company trucks and cars manned by first aid experts and carrying at all times full first aid equipment, thus being prepared to give immediate first aid along the highway.

Hobbs Named Chairman of IES - Bay Section

Leonard A. Hobbs, Smoot-Holman Co., San Francisco, was elected chairman of the San Francisco Bay Cities section, Illuminating Engineering Society, at the annual election just conducted. W. E. Carlson, lamp department, General Electric Co., was named vice-chairman; M. V. Sisich of Pacific Gas and Electric Co., secretary, and on the board of managers, R. G. Dummel, the Holophane Co., N. H. Graves, Pacific Gas and Electric Co., L. H. Brown, Stanford University, G. A. Trosper, Pacific Gas and Electric Co., and F. J. Wellhouse, Westinghouse Electric and Manufacturing Co. Retiring chairman was N. H. Graves.

Air Conditioning Society Elect

The Air Conditioning Society of San Francisco elected as its officers for the year 1940-41 Oliver Johnson, Standard Oil Co. of California, president; Earle Fanning, Atlas Heating & Ventilating Co., vice-president, and James R. Hedge, Pacific Gas and Electric Co., secretary-treasurer. R. B. Holland of York Ice Machine Co. was president during the past year.

● POSTPONED AGAIN, this time at the instance of Federal Judge Michael J. Roche, the Electrical Contractors' Associations of San Francisco and Oakland will have their hearing on July 9. Stating that because of pressure of other cases, he had not been able to study the demurrer filed by attorney Walter J. Walsh for the contractors, the Federal Judge moved the trial date from June 11 when it was previously scheduled.

● AFTON, WYOMING residents have approved, by a vote of more than 13 to 1, a proposal for municipal operation of the Star Valley power plant, owned by C. J. Call of Salt Lake City. The community would buy the plant outright for $230,000. RFC is studying the town's application for the money to acquire the property.

● THE 95,000 PERSONS who attended the Los Angeles Home Show held May 25 to June 5 at the Pan-Pacific Auditorium under the auspices of the Building Contractors Assn. of Southern California were impressed with the importance of modern electrical conveniences by several displays sponsored by the Electrical Development League. Included were a large appliance exhibit, a light conditioning booth and an adequate wiring board showing different types of switches and outlets whose uses were explained by an attendant.

Ickes Awards Contracts For Parker Dam Transformers

Harold L. Ickes, Secretary of the Interior, has awarded contracts totaling $674,800 for installation of power transformers at Phoenix and Parker to bring electric power from Parker Dam to the Salt River valley.

The Allis-Chalmers Mfg. Co. of Milwaukee was awarded a contract to install four transformers at the Phoenix substation at a cost of $426,800.

The Mahoney Electric Co., St. Louis, received the contract for installations at the Parker plant at a cost of $248,000.

The power plant at Parker is under construction, but no electricity is expected to be generated there for at least 14 months. Power generated at Boulder Dam now is being supplied Phoenix and the Salt River valley through the transmission line to Parker Dam and other lines running up the river.

The Parker Dam transformers are scheduled to step up the power generated there to 154,000 volts for transmission over the 140-mile line to Phoenix and the Phoenix transformers, to be installed in the substation at the Central Arizona Light and Power Co.'s steam plant, will step down the power for commercial consumption.

Contracts Awarded

The Tacoma Board of Contracts and Awards recently awarded contract for material for Tacoma's power inter-tie with Bonneville lines: Home Electric Co., Tacoma, $41,517 for three 500,000 kv. circuit breakers; also $14,980 for ten disconnecting switches; Westinghouse Electric & Mfg. Co., lightning arresters, $2,436; Allis-Chalmers Co., Seattle, 250,000 kva. circuit breaker, $7,050; Graybar Electric Co., Tacoma, $25,000, distribution transformers.

To Skagit Electric Co., Mount Vernon, Wash., for the installation of automatic gates and signals on the county bridge over the Skagit River, $4,144.

To Bethlehem Steel Co., of Seattle, for erecting two high voltage transmission towers over Hylebos waterway and five line towers to connect the Bonneville and Tacoma power systems, $19,757.

● The construction industry's section of the San Francisco Chamber of Commerce has appointed a coordinating committee which is surveying electrical contractors as well as other construction groups to submit to the Federal government the proposition that in its preparedness program, it make use of the existing facilities and organizations of business firms rather than set up new and inexperienced governmental agencies for the same purpose.

● "Twenty-four Hour Service," Pacific Power & Light's movie, is being released now to service clubs, business men's groups and others in Oregon and Washington. Telling the story of a modern electric power system and the territory which it serves, this film was adapted to the screen by members of the Pacific organization. Story is by John Dierdorff, direction by Lewis A. McArthur.

TRADE NOTES

● Indicative of appliance business in the West is a statement by Fred Fenton, Easy Washing Machine Co., western division manager, that during the first four months of this year his division has doubled its business in spinner models in the higher-priced brackets, and that there has been a 20 per cent increase in washer sales and a 75 per cent increase in ironer sales over the same period last year.

● The Golden Market of the West for fall, 1940 will be held at the Western Furniture Exchange & Merchandise Mart from July 29 to Aug. 3. This 50th Semi-Annual Market will really comprise six great markets in one, including the 50th Western Furniture Market, the 12th Western Radio and Appliance Show, Housewares, Lamp and Giftwares Show and others.

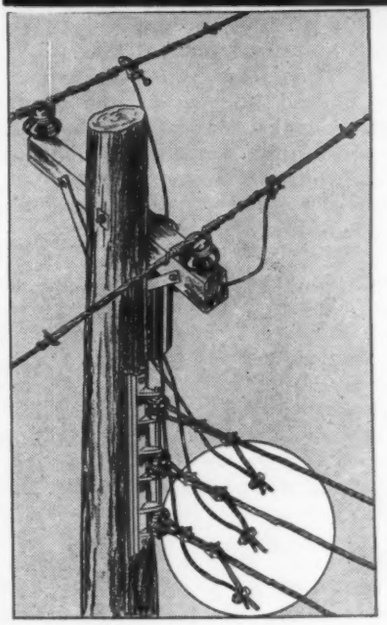
● Lee McCann, assistant general manager, Stromberg Carleson Co., of Rochester, N. Y., will be one of two featured speakers at the Radio and Appliance Trade Dinner, Wednesday evening, July 31, discussing developments in radio and special merchandising aspects of the fall market of 1940.

● American Ironing Machine Co., Algonquin, Ill., manufacturers of Simplex Ironers, has named Leo J. Meyberg Co. of San Francisco as their exclusive distributor in California and western Nevada.

● California Electric Co. has been holding a preview of the 1941 Crosley radio line. A. M. (Bob) Roberts, sales manager for the radio and appliance division of California Electric, recently returned from the Crosley plant in Cincinnati.

● Anaconda Wire & Cable Co. has established separate division headquarters at 111 Sutter Bldg., San Francisco. From these headquarters and from offices in Denver, Los Angeles and Seattle, Anaconda offers a complete engineering service to the entire West.

modernize
YOUR
DISTRIBUTION
PRACTICE—



Rural line transformer pole with a secondary span to a yard pole.

RELIABLE
SOLDERLESS
CONNECTORS

Split bolt connectors have become standard in the industry. Reliable Electric offers well designed types for all applications. Shown above are aluminum to copper connectors which provide adequate spacing between the red and white wires to avoid galvanic corrosion.

Reliable
ELECTRIC COMPANY
OVER 30 YEARS SERVICE TO THE UTILITIES
3145 CARROLL AVENUE · CHICAGO ILLINOIS

● THE LINCOLN ELECTRIC CO., world's largest manufacturer of arc welding equipment, Cleveland, Ohio, has appointed E. H. Weil as manager of its office in Portland, Ore. Weil began his career on the west coast in 1935 with the company's San Francisco office and for the past two years has been located in Los Angeles. His vacancy in Los Angeles will be filled by Chester Sherer who, until the change, represented the company in Toledo, Ohio.

● WIRING DEPARTMENT at Howell Electric Co., Reno, has been taken over by Tom Moltzen, who has run the department for many years. Under the firm name of Moltzen and Fitch, the wiring department is conducted from the rear of the Howell store, 209 N. Virginia St., Reno, Nev.

● SUNSET ELECTRIC CO., Seattle, has been named distributor for Farnsworth radios and television equipment for Washington, Oregon and Alaska. according to Dean A. Lewis, Pacific Coast district manager for the Farnsworth Television & Radio Corp. Gordon Prentice is president of Sunset Electric. The firm last month celebrated its 25th anniversary.

● THE LUCAS ELECTRIC LTD., Vancouver, has just completed the electrical installation in the new Richborough Apartments, Vancouver. The Canadian General Electric Co. supplied refrigerators for each of the 28 suites in this block.

● C. T. WILLIAMS, who has operated the Williams Plumbing & Electric store in Ashton, Idaho, for several years, recently opened a new store in St. Anthony, Idaho. He will stock a complete line of wiring supplies and fixtures, General Electric refrigerators, Westinghouse ranges, and radios and small appliances.

● UNION METAL CO. AND MARBELITE, makers of street lighting standards, have joined forces to form the new Pacific Union Marbelite Co. operating in Los Angeles and San Francisco. R. G. Vandenboom remains manager in Los Angeles and E. Zimmerman, sales engineer in San Francisco. Leonard W. Towner, formerly with General Electric Co. street lighting division, who has been with the Union Metal Co. for the past few years, has returned to the street lighting division of G-E at Los Angeles.

● REED-PRENTICE OF B. C. LTD. was recently incorporated at Victoria, B. C., with authorized capitalization of $74,000. The firm will engage in business as electrical engineers and have their registered offices in Vancouver.

New Wholesale Firm For Pacific Northwest

A new firm has been incorporated to take over and expand the manufacturing and wholesaling operations of the Brown-Johnson Wholesale Co. manufacturers of floor lamps, lamp shades, lighting equipment and ornamental work. Known as the Columbia Electric and Manufacturing Co., its chief purpose will be further expansion of territory in Washington, Oregon, Idaho, Montana, Hawaii and California, and an endeavor will be made to increase the number of jobbers now distributing these manufactured items.

JOHNSON

The new firm, with Eric A. Johnson, president and W. E. Lofgren, secretary-treasurer, will continue to occupy the present Brown-Johnston quarters at S 123 Wall St., Spokane.

Sixty-six persons are employed by the new firm, now the only manufacturer of electric equipment in the Pacific Northwest.

Moved

Metro Radio & Electric Co., from 4539 W. Adams to 2825 Crenshaw Blvd., Los Angeles.

Electric Home & Supply Co., from 203 Mill street to 116 So. Main street, Porterville, Calif.

Flint Distributing Co., Salt Lake City, Intermountain distributors for Kelvinator, Zenith and Bendix products, from 253 East 3rd South to 316 West 2nd South.

ABOUT PEOPLE

Gendron Appointed Assistant To Raver at Bonneville

U. J. Gendron was named assistant Bonneville Administrator this week. The post is a new one, recently created by congressional amendment to the Bonneville act, federal statute under which the Bonneville administration operates.

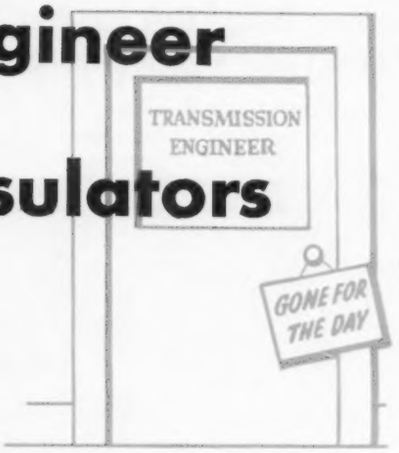
Gendron has served as executive assistant to the Bonneville Administrator since 1937. He was one of the first appointees under the late J. D. Ross, first to head the agency. He has held successive positions in the U. S. Department of Labor, Health Service, Shipping Board, NRA, PWA and at Bonneville.

● CHARLES P. CULBERT, who has just assumed the western sales managership of the Proctor Electric Co., with headquarters in Los Angeles, announces the following appointments to his Coast organization: Earl Eckstrom, Seattle district manager covering Washington, Oregon, Idaho and Montana; Virgil W. Harris, San Francisco district manager covering northern California, northern Nevada and Utah; T. V. Johnston, Los Angeles district manager covering southern California, southern Nevada and Arizona.

● C. H. WISSING has been appointed sales representative for Silvray, Inc., of Long Island City, N. Y., in the northern California, Nevada and Utah territory. For the past year Wissing has been a member of the commercial lighting sales organization on the San Francisco division of Pacific Gas and Electric Co. Previously he had been in charge of commercial lighting sales for the California-Oregon Power Co. Wissing's headquarters will be in the San Francisco office of Graybar Electric Co.

● ARTHUR T. HAUGH, formerly general sales manager of Sparks Withington Co., Jackson, Mich., has been appointed Pacific Coast representative for the new Blackstone Perfect Automatic Washer and the Blackstone line of wringer-type washers, spin-dry washers, and ironers, according to P. S. Moynihan, sales manager of Blackstone Corp., Jamestown, N. Y. Haugh, whose headquarters are at 1421 Spazier Ave., Glendale, Calif., is well-known in western appliance merchandising circles as a former president of both the National Automotive Parts Assn. and the Radio Manufacturers Assn. and for his work as Chairman of the National Radio Legislative Committee.

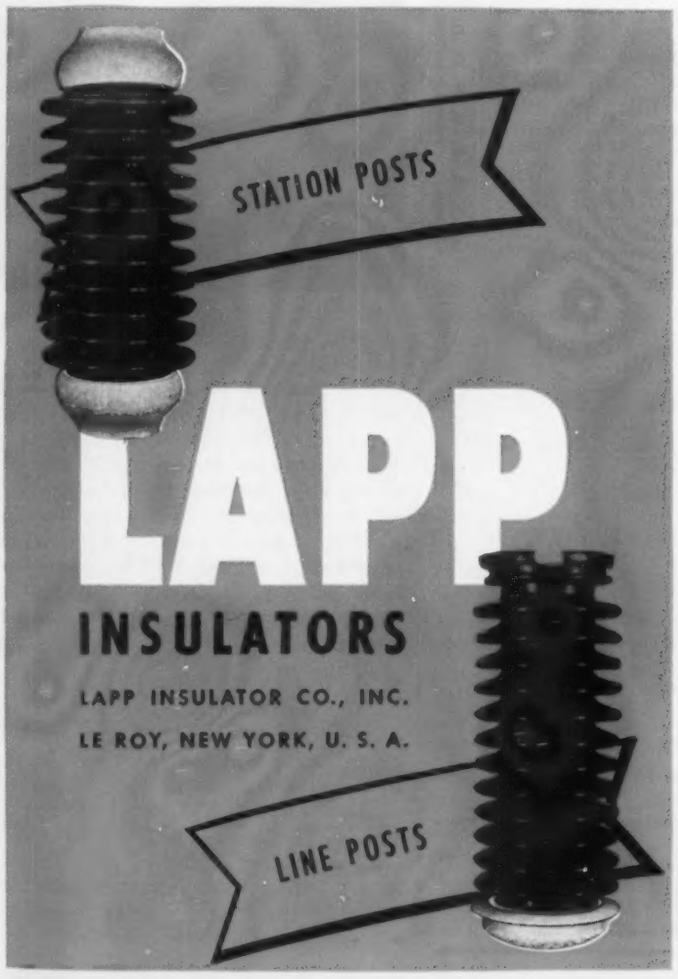
For the transmission engineer who wants to forget insulators



If you're a typical transmission construction or maintenance engineer, you'll still have plenty on your mind, even if you can be relieved of all the worries relative to insulators. Such things as radio interference from insulator corona, pole top burnoffs from dirty insulators, insulator failure under power arcover, puncture, cracking or mechanical (stones and bullets) attack.

Engineers in a number of companies have been able to improve their sleep by standardizing on the Lapp Post design —for conductors and for station application.

For the Lapp Line Post and Station Post are insulators designed to overcome just about every weakness inherent in conventional transmission and station insulators. In the first place, it is the one type of unit designed to do a job of insulating, rather than to be something easy to manufacture.



Review the pertinent facts of Lapp Post design, and sound engineering makes the choice clear. *Radio interference:* elimination of pin or other conductor within the body means terminals are separated by full length of the unit. Corona cannot form at rated voltage of insulator. *Dirt conditions:* fog type corrugations are open to cleaning action of wind and rain, afford uniform leakage path. *Power arcover:* multiple short sturdy petticoats resist attack, if lost do not impair insulator performance. *Puncture:* without internal pin, internal puncture distance is as great as external flashover distance. *Cracking:* one-piece body eliminates possibility of thermal movement between nested parts. *Mechanical attack:* resists stones and bullets. Severe impact will break off one petticoat, leave insulator with ample margin of operating security.

A complete down-to-facts discussion of operating performance appears in the Lapp catalog. The most productive half-hour of your career will be when you study the facts—and standardize on Lapp Line Posts and Station Posts.

the proved design for better operating performance

Ellerbeck Named New Manager of Utah Power Ogden Division

George L. Ellerbeck, Utah Power & Light Co.'s Southern division manager, has been appointed manager of the Ogden division, succeeding Nims, according to R. H. Ashworth, general superintendent. (See p. 61)

The change in managerial assignments sends Ellerbeck from Provo to Ogden and Nims to new headquarters in the general company office in Salt Lake City.

Ellerbeck, a native of Utah and graduate of the Univ. of Utah, started his electric utility career as commercial salesman in Salt Lake City in 1926. Successively he held the positions of supervisor of commercial sales, Salt Lake division, system assistant commercial manager and system industrial manager. In March, 1937, he was promoted to managership of the Southern division.

ELLERBECK

Appointment of W. L. Faddis of Bingham Canyon as Southern division sales manager of the Utah Power & Light Co. to succeed D. D. Moffat, Jr., has been made, according to George L. Ellerbeck, manager of the division. Moffat recently was granted a leave of absence to accept a fellowship at the Massachusetts Institute of Technology, Cambridge, for a full year's research in business administration and economics.

Faddis formerly was sales manager of the Bingham division of the company, a position he has held since May, 1935. He was first employed by the pioneer utility in June, 1924 as a bookkeeper at Bingham Canyon and subsequently became storekeeper.

Fisher New Chairman Edison Electric Sales Committee

R. E. Fisher, vice-president in charge of Public Relations and Sales, PG and E, has been elected chairman of the general sales committee of Edison Electric Institute. He succeeds H. E. Dexter, Central Hudson Gas & Electric Corp.

FISHER

Fisher has been associated with PG and E since 1911. In 1921 he became manager of the company's commercial department, and the following year was elevated to his present position. He has been president of the Pacific Coast Electrical Assn., served for two years as chairman of the Pacific Coast Electrical Bureau, and was president of the San Francisco Electrical Development League.

● A. T. COWARD, vice-president of the B. C. Electric Railway Co., recently completed 50 years of service with the organization and the event was marked by a presentation to him, from employees of the Vancouver Island division of which he is head, of a solid gold desk clock. The presentation was made during the annual dinner and dance of the Victoria office employees' association.

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Gardner Electric Manufacturing Co.
CURRENT TRANSFORMERS, NIAGARA AIR INSULATED
Lee Skipwith Company
CABLE GRIPS
Kellems Products, Inc.
CONNECTORS, GROUND ROD CLAMPS, UTILITY HOIST
Jasper Blackburn Products Corp.
GROUND LINE POLE AND GREEN WOOD TREATMENT
Osmose Wood Preserving Company
TONG TEST AMMETERS—LOW VOLTAGE GENERATORS
Columbia Electric Mfg. Co.
UNDERGROUND CABLE TOOLS & EQUIPMENT
T. J. Cope, Inc.
TREE TRIMMING EQUIPMENT
TREE SURGEONS' TOOLS
Bartlett Manufacturing Co.
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Clifton Manufacturing Co.
METER JEWELS
Herman D. Steel Company
SAFETY LINE TOOLS
Burnham Line Tool Company

Stocks at San Francisco
Electrical Specialty Co., Inc.,
316 Eleventh Street

Stocks at Los Angeles
Electrical Specialty Co. of So. Calif.,
451 South San Pedro Street

Stocks at Seattle
Electrical Specialty Co., Inc.,
714 Fourth Avenue

For the Coast Trade

At your doorstep you now have an adequate stock of popular D-H alloys, wires, ribbons, rods and other forms.

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TRADE MARK REG. U.S. PAT. OFF.
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Pepco 20-Year Club Receive Service Pins

Seven members of the PEPCo Twenty Year club, Portland, received 50-year service pins at the annual club meeting recently. They are Andy Richmond, Joe A. Price, Alex Aitken, H. F. Lieberman, W. R. Castleman, Patrick Hughes, G. W. Bucholz and T. W. Sullivan. The club is comprised of employes of of Portland Electric Power Co.'s two subsidiaries, Portland General Electric Co. and Portland Traction Co. who have served 20 years or longer.

New officers elected by the club were A. H. Kreul, Portland General Electric Co., president; Thomas Pumfrey, Portland Traction Co., first vice-president; H. R. Wakeman, Portland General Electric Co., second vice-president; H. C. Schade, Portland General Electric Co., secretary-treasurer. The club initiated 55 new members who attended their 20 years service rating during the year.

● P. S. MOYNIHAN, sales manager of Blackstone Corp., has announced the appointment of Caygill & Caygill as new representatives for the states of California, Nevada, New Mexico and Arizona, effective at once. Caygill & Caygill maintain offices at 745 Mission St., San Francisco, and 2515 West Seventh St., Los Angeles, and will handle the distribution of the complete Blackstone line, including the new Blackstone Perfected Automatic, Blackstone Wringer and Spin-dry type washers, and Blackstone Ironers.

● LANCASTER G. HUMM and Staff recently announced the removal of its personnel service and psychological service to 416 West 8th Street, Los Angeles, in the Commercial Exchange Bldg. Dr. Humm assisted in classes of conference sales training in the electrical industry in southern California.

● W. C. MULLENDORE, executive vice-president of the Southern California Edison Co., was elected trustee of the Mutual Life Insurance Co. of New York at a recent meeting held in New York. This is the first time that a Los Angeles man has been a member of the board of trustees of the company.

● F. L. VAN SLYKE, of Puyallup, Wash., was recently re-elected president of the Washington State Electrical Contractors' Assn. to serve another one year term. Other officers named were Frank Smallidge, Wenatchee, vice-president; E. M. Hanold, Orting, secretary-treasurer and G. A. Estep, of Yakima, district committeemen. Estep succeeds George Picotti, of Yakima.

● JOHN WALSH, lighting salesman in the Bakersfield district, has been transferred to the PG and E general office as a power salesman. Walsh has been with the power company for seven years, first being located in the San Luis Obispo district. Henry Huber of the Fresno sales department was transferred to Bakersfield to succeed Walsh.

● A. P. CRAIG, director of the World's Fair exhibit of Westinghouse at New York, visited San Francisco and the Golden Gate International Exposition late in June as G. H. Lewis, manager of the exhibit at the latter fair, returned from visiting the New York exhibit.

● RALPH W. WILEY, chief of the Department of Electricity, San Francisco, was given a testimonial dinner by his crew on completing 20 years as chief of the department recently.

● ROBERT R. GROS, director of public relations, Pacific Gas and Electric Co., San Francisco, addressed the Salt Lake Kiwanis club, June 13, in Salt Lake City.

● GEO. H. CURTIS, 540 McAllister street, San Francisco, has been named San Francisco representative of The Tork Clock Co., Mt. Vernon, N. Y., succeeding Nicholas & Cook.

● R. G. KENYON, advertising manager of the Southern California Edison Co., has been elected president of the Los Angeles Advertising Club for the 1940-41 year.

● BERT HEINZ, recently a salesman with Puget Sound Power & Light, has joined the G-E Supply Corp. in Seattle where he will handle fluorescent lighting sales.

Ridgeway of PG and E Dies at San Rafael

Harry G. Ridgway, North Bay Division manager of the Pacific Gas and Electric Co., died at San Rafael June 23 after a protracted illness. Born at Mariposa, Calif., he was 59 years old. After a brief period with the Pacific Tel. & Tel. Co. and with the Stockton Gas Co., he joined PG and E in 1908 as a bookkeeper. In 1911 he was made assistant manager of the Marin District and in 1920 took over the position he occupied at the time of his death. He was one of the organizers and first president of Marvelous Marin, Inc., a past president of the Redwood Empire Assn. and the San Rafael Rotary Club. He was an ardent and excellent horseman and active in game conservation.

● A. J. COLE, vice-president of the McGraw Electric Co., died at Elgin, Ill., June 10 as the result of a heart attack. From 1932 to Jan. 1, 1940 Cole was Pacific Coast manager of the Toastmaster and Bussman divisions of

COLE

McGraw Electric with headquarters in Los Angeles. He was 57 years old and a native of England. He had been with McGraw Electric for 25 years.

● GEORGE F. ELDRIDGE, for many years field secretary for the California Electragists in northern California, died in Oakland June 3rd. Starting his career in the electrical industry as a stock clerk in the Schluter Co. in Oakland, appliance distributors, he later worked as apprentice and journeyman electrician in the shipyards, the 1915 Fair in San Francisco, and in industrial plants. In 1927 he was engaged by the late Cy Geisbush as field secretary for northern California Electragists. Later he carried on association activity as secretary for the Alameda County Electrical Contractors and later as San Francisco manager Biddle Trade Bureau.

● A. E. CLARKE, general sales manager of the Smoot-Holman Co., Inglewood, Calif., died at St. Helena June 19 after a lingering illness. A native of Canada, Clarke was 53 years old. As a young man Clarke became associated with George W. Holman in a porcelain enameling business at Des Plaines, Ill. Later when this business was consolidated with the Benjamin Electric & Manufacturing Co., he was works manager of that organization. During recent years he was again associated with Holman in the Inglewood firm.

● W. C. COUSINEAU, head of the addressograph division of the Southern California Edison Co. investment department, died June 14 after a lengthy illness. He had been with the Edison Co. for 18 years.

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PROFILES OF THE MONTH

George West, Pacific Coast manager of G-E's merchandise department, has just returned from the Hawaiian Islands where he has conducted cooking schools and held G-E sales meetings

Emory Wishon, vice-president and assistant general manager of Pacific Gas and Electric Co., is pretty pleased about the old ranch house that he has just completely electrified

Henry A. Crossland has been appointed western sales manager of General Electric's radio receiver sales division. He served as G-E's first manager of television receiver sales

James R. Kearney, Jr., who several months ago was named president of the Kearney Corp., St. Louis, succeeding his father, is a frequent visitor to West Coast representatives' offices

F. W. Hockensmith, Electrical Development League of Southern California; F. H. Harrigan, Modern Kitchen Bureau, and Chet Dye, L. A. Bureau of Power & Light, pause from their work on the "Stoppa Shopper" campaign which was held recently in the Southern California territory

Preview of coming campaigns by

P·G·and E·

PACIFIC GAS AND ELECTRIC COMPANY

ELECTRIC APPLIANCE SOCIETY OF NORTHERN CALIFORNIA

ELECTRIC RANGE ADVERTISING

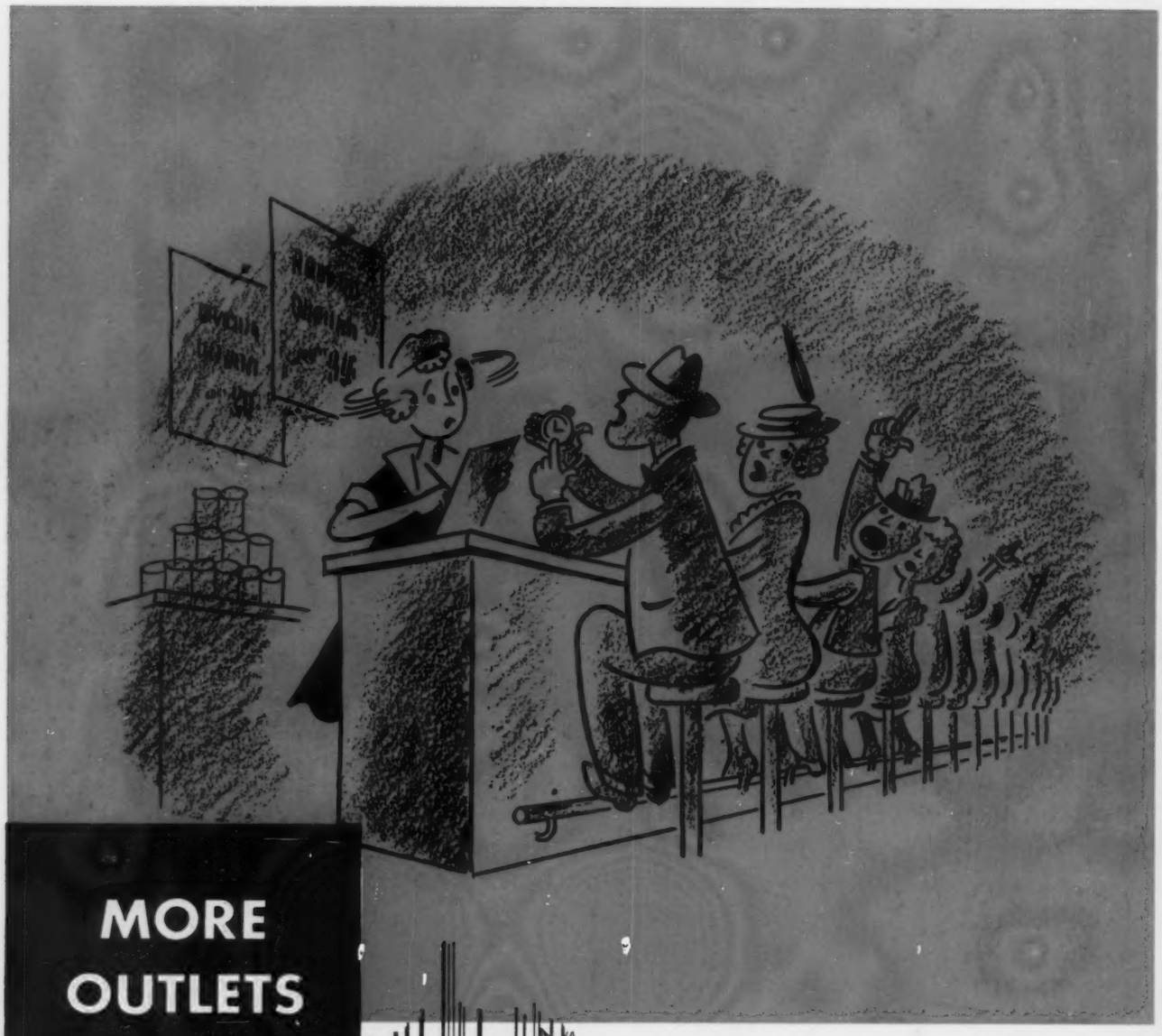
This month the Company's electric advertising is mainly devoted to electric ranges, and at least one advertisement will appear in ALL our electric territory including the Metropolitan Bay region.

Another advertisement to appear in this territory will feature Fluorescent Lighting, probably the most talked about subject in the electric industry today.

If you can tie in with either of these advertisements, your local paper will be glad to give you advance proofs.

DEALERS: By watching this page from month to month you can keep informed of sales promotional campaigns to be sponsored by the Pacific Gas and Electric Company and the Electric Appliance Society. Detailed information will be supplied, as usual, through the mail. If such information is not received, call our local office or write Electric Appliance Society, 1355 Market St., San Francisco, Calif.

EW 107-740



MORE OUTLETS NEEDED

You can't expect good sales service from overworked wiring, either. Inadequate wiring hampers the advancement of home electrification, for electrical conveniences are conveniences only when there are sufficient outlets to permit their use when, where and how the homeowner desires. To create the maximum market for electrical appliances and services, talk and sell adequate wiring for both old* and new homes. It is essential for the continued growth and prosperity of the entire electrical industry.

Ask about new, inexpensive methods of rewiring old homes

PACIFIC COAST ELECTRICAL BUREAU

601 WEST 5TH STREET LOS ANGELES • 447 SUTTER STREET, SAN FRANCISCO

CERTIFIED ADEQUATE RED SEAL STANDARD WIRING

7-40